



Corporate Energy and Emissions Plan

District of Fort St. James

August 2024



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Acknowledgements

The Corporate Energy and Emissions Plan was developed by the District of Fort St. James in collaboration with the Community Energy Association.

The District of Fort St. James would like to acknowledge the contributions of District staff that were involved in the development of this plan.

Executive Summary

Introduction

A key part of a local government’s role in dealing with climate action is to reduce emissions caused by its own assets; this helps it meet its requirements as a signatory of the BC Climate Action Charter. This Corporate Energy and Emissions Plan will provide the Council and staff with the background information to reduce emissions and develop strategic priorities.

Reducing corporate GHG emissions has the following co-benefits:

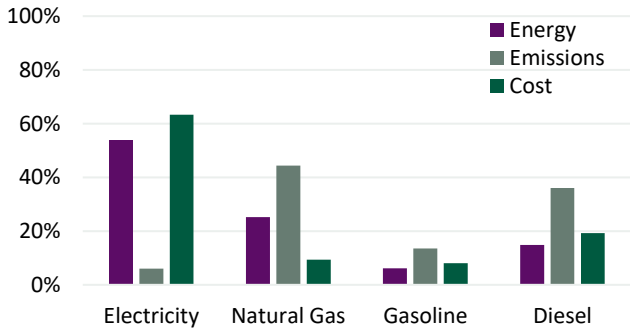
- Reducing local government energy costs, i.e. providing better value for money to taxpayers
- Providing a more comfortable working environment for staff and a healthier indoor environment for visitors
- Leading by example with its own assets, helping stimulate further GHG emission reductions in the community
- Community economic development by leveraging external funding into projects in the community
- Improved climate change resilience

Current Emissions and Energy Expenditure

In 2022, Fort St. James’ corporate inventory, according to LGCAP, included:

- Energy consumption: 9,124 GJ
- Emissions: 261 tCO₂e
- Energy expenditures: \$360,804

Fort St. James’ proportion of corporate energy, emissions, and expenditures by fuel type for 2022 are shown on the right.



What We Can Do: Recommended Climate Actions

Based on staff consultation and best practices, 17 actions were identified to be implemented. Actions fall under the following five categories.

1. ***New Buildings and Infrastructure:*** Improve energy performance and lower GHG emissions in ***new*** District buildings and infrastructure
2. ***Existing Buildings and Infrastructure:*** Improve energy performance and lower GHG emissions in ***existing*** District buildings and infrastructure
3. ***Renewable Energy:*** Increase the use of renewable energy
4. ***Transportation:*** Improve energy efficiency and reduce GHG emissions in the District's fleet
5. ***Enabling Actions and Corporate Leadership:*** Institutionalise the plan and demonstrate leadership on waste and water

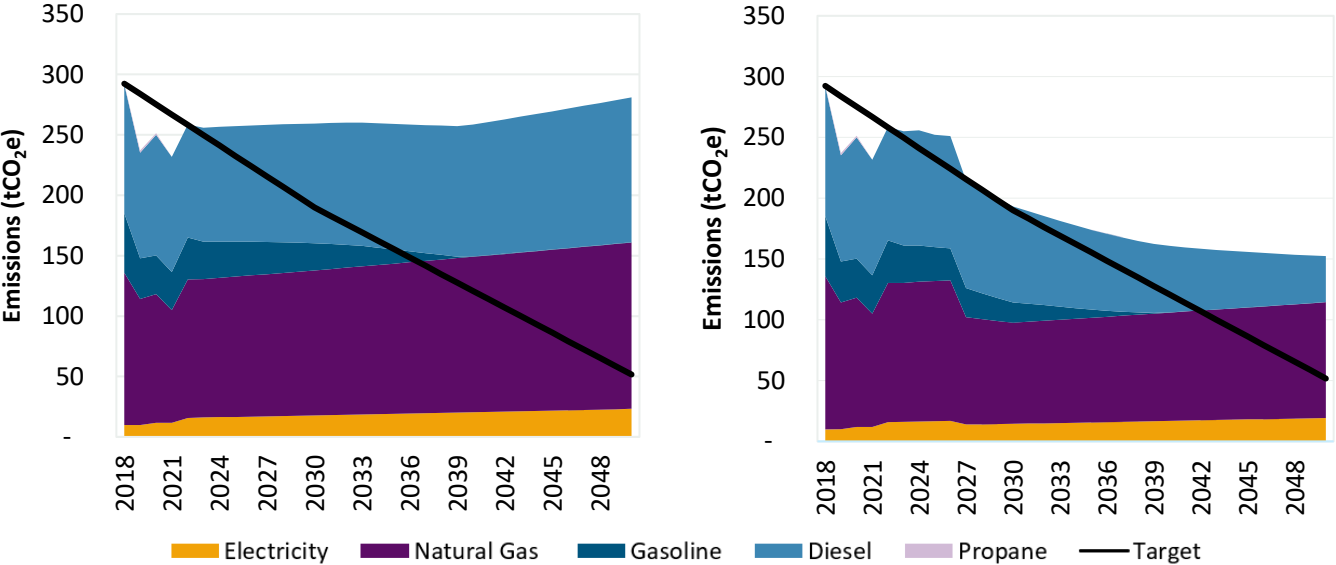
A detailed list of actions for implementation is featured in Appendix A. The timeframe for implementation, department or position responsible for implementation, and possible partners or funding sources for each action are also noted. Implementation of these actions is dependent on funding availability and will consider the District's fiscal responsibility.

Based on business as usual projections, GHG emissions are forecasted to decrease by 13% in 2030 and 10% in 2050 compared to 2018 levels. However, costs are forecasted to increase by 26% by 2030, as compared to 2018. Business as usual assumes no additional actions by the District but takes into account growing population (and hence additional assets), policies of higher levels of government, and other factors such as a warming climate.

Implementing the actions identified in this plan, total GHG emissions are expected to decrease by 35% in 2030 relative to 2018, while costs are expected to increase by 3%.

The business as usual emissions trajectory for Fort St. James emissions can be seen below in the chart on the left, whereas the chart on the right shows the emissions trajectory if the actions contained in this Plan are implemented. The black lines on the charts show the District’s GHG emissions reduction targets of 35% reduction by 2030, compared to the 2018 baseline, and 80% reduction by 2050. 2022 is an inventory year, whereas 2023 onwards are projections.

Business-as-Usual Emissions and Modelled Emissions from Proposed Climate Actions



The planned actions are expected to drive the District’s emissions below the target line until 2030, reaching the short-term goal. More work will need to be done to achieve the 2050 goal.

The actions that will achieve the largest reductions in GHG emissions and fuel expenditures in 2030 are shown in the tables below.

Action	Annual GHG Savings by 2030
Implement building energy retrofits	22.0 tCO ₂ e
Invest in low carbon and renewable fuels for corporate fleet	16.1 tCO ₂ e
Implement low carbon heating retrofits for buildings	8.5 tCO ₂ e

Action	Annual Cost Savings by 2030 ¹
Implement building energy retrofits	\$34.1k
Implement renewable energy installations	\$20.6k
Invest in low carbon and renewable fuels for corporate fleet	\$15.8k

Successful implementation of this Plan depends upon staff capacity and capital. Internal and external funding sources are identified in this plan and include the LGCAP funding allocation for climate action, allocation from operating budget, climate action revolving fund, and FCM’s Green Municipal Fund.

It is advisable to renew this plan in five years as many actions will be completed by then, there should be better access to products and technologies for reducing emissions, and the legislative and funding framework will have likely evolved. This will allow Fort St. James to continue making progress towards its short- and long-term targets.

¹ This table provides estimated fuel cost savings but does not reflect the lifecycle cost for each action.

Introduction

Our Role in Climate Action, & Benefits

Climate action consists of both reducing emissions, or *mitigation*, and preparing for the impacts of a changing climate, or *adaptation*. This plan focuses on mitigation, as a key part of a community's role in dealing with climate action is to reduce emissions caused by its own assets. This also helps it to meet its requirements as a signatory of the BC Climate Action Charter (CAC). The District could also declare a Climate Emergency concurrently with the adoption of this plan to demonstrate its commitment to climate action.

The BC Climate Action Charter is a voluntary agreement between the Province of BC, the Union of BC Municipalities (UBCM), and each local government signatory. The Charter was launched at the 2007 UBCM Convention. By signing it, local governments acknowledge that they and the Provincial government have an important role in addressing climate change. Local governments make commitments including to measure and report on their corporate emissions, and progress towards becoming carbon neutral in their own operations. The District of Fort St. James is a signatory to this Charter, along with almost every local government in BC.

Reducing corporate GHG emissions has the following co-benefits:

- Reducing local government energy costs, i.e. providing better value for money to taxpayers
- Providing a more comfortable working environment for staff and a healthier indoor environment for visitors
- Leading by example with its own assets, helping stimulate further GHG emission reductions in the community
- Improved climate change resilience
- Community economic development by leveraging external funding

For the last co-benefit, external funding can be leveraged to improve on the business cases of projects identified in this plan.

Type of Inventory

In this report, Fort St. James' corporate inventory is defined according to the Local Government Climate Action Program (LGCAP), which has the same requirements as the previous Climate Action Revenue Incentive Program (CARIP). This method of corporate inventory creation is described in more detail below.

Local Government Climate Action Program (LGCAP)

LGCAP Reporting is the reporting conducted by local governments in BC each year to receive their Local Government Climate Action Program (LGCAP) funding. It requires local governments to report emissions from their traditional services including:

- Administration and Governance
- Drinking, Storm and Waste Water
- Solid Waste Collection, Transportation and Diversion
- Roads and Traffic Operations
- Arts, Recreation and Cultural Services
- Fire Protection

Each category includes emissions from stationary sources (buildings and facilities) and mobile sources (vehicles and equipment) used to operate and maintain each service. Note that policing (i.e. RCMP Buildings and Fleet), emissions from solid waste (i.e. the landfill), the Seniors Program fleet, and the airport are not included in LGCAP reporting. Fuel from contracted services and from staff-owned vehicles on mileage for corporate work are included in LGCAP requirements, however, they are not applicable for Fort St. James.

Another category, Public Works, has been added to Fort St. James' inventory as this service encompasses multiple other LGCAP categories.

District of Fort St. James – Progress So Far

Table 1 describes the actions completed by the District of Fort St. James, as reported in the 2016-2019 CARIP reports and shared in the Corporate Workshops.

Table 1 – Highlighted Corporate Climate Actions

Buildings/lighting	Continuous replacement of lighting with LEDs, and installed energy efficient furnaces in the arena.
Energy generation	Geothermal system in the arena, library, and district office, and solar PV on three park public washrooms.
Transportation	Purchased more fuel-efficient dump truck and van for senior transportation service and purchased electric Zamboni and electric hand tools.
Solid waste reduction	Purchased a dishwasher for the Community Centre to encourage reusable tableware, and work with a local not-for-profit recycling organization.
Water / wastewater	Signed the Climate Action Charter, integrated community GHG targets in the OCP, and created a Wildfire Resiliency Plan.
Institutionalisation	Adapting to a changing climate was made a council priority.
Natural resources	Ongoing management of the community forest, and tree planting in Cottonwood Park.



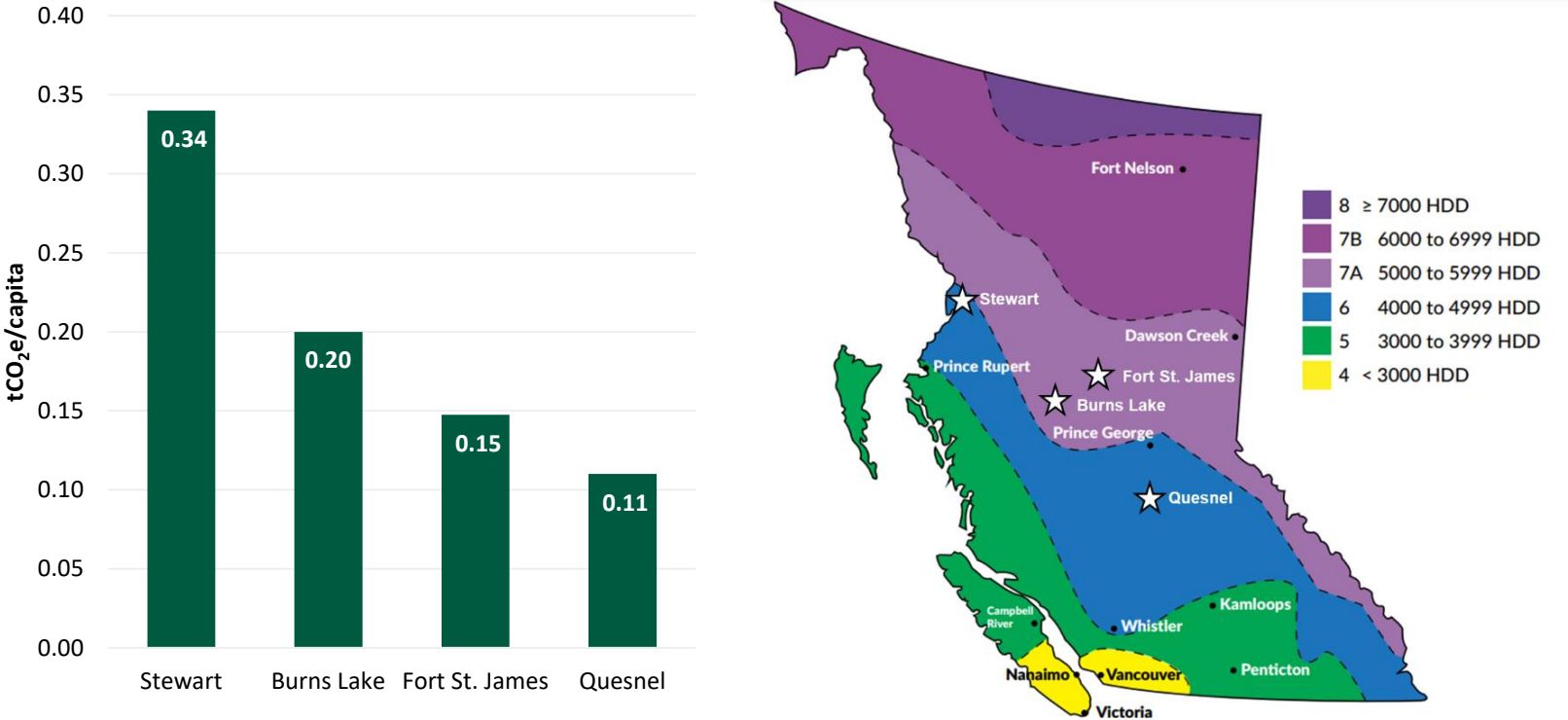
Figure 1 – Fort St. James Arena

Figure 2 compares the per capita GHG emissions for the District’s corporate operations with other municipalities in Northern BC. Data is sourced from LGCAP reporting which uses a consistent methodology.

Fort St. James’ per capita corporate emissions (0.15 tCO₂e/capita) are greater than Quesnel’s (0.11 tCO₂e/capita), but less than Burns Lake’s (0.20 tCO₂e/capita) and Stewart’s (0.34 tCO₂e/capita).

The figure also shows the BC climate zones², which are defined by the number of Heating Degree Days (HDD) in the community. Fort St. James and Burns Lake are located in zone 7A, and Stewart and Quesnel are in zone 6, meaning that Fort St. James and Burns Lake typically have greater heating requirements than Stewart and Quesnel.

Figure 2 – A Comparison of Per Capita Corporate Emissions and Climate Zones, 2022



² https://energystepcode.ca/app/uploads/sites/257/2024/06/StepCodes_Guidebook_v3.pdf

Corporate Energy & Emissions Plan Development

In 2023, the District of Fort St. James, in collaboration with CEA, began the process of creating a Corporate Energy and Emissions Plan. The planning process consisted of four main steps, as illustrated in Figure 3. A summary of the staff workshop is in Appendix D.

Figure 3 – Development of the Corporate Energy and Emissions Plan



Energy & Emissions – Where We Are Now

Overview

An inventory is a compiled list of all the energy consumed, the money spent on energy, and the associated greenhouse gas emissions created by the local government in their operations. This may identify the best opportunities for cost and emissions reductions.

This inventory describes the GHG emissions, energy consumption, and annual energy expenditures of all corporate assets. In 2022, for the District of Fort St. James:

- Energy consumption was estimated at 9,124 GJ
- Emissions were estimated at 261 tCO₂e
- Energy expenditures were estimated at \$360,804

Assumptions made are described in Appendix E. See the info box below for a description of common units to express energy usage and GHG emissions, and what they mean practically.

What is a GJ?

A gigajoule (one billion joules) is a measure of energy. One GJ is about the same energy as:

- *Natural gas for 3-4 days of household use*
- *25-30 litres of diesel or gasoline*
- *Two 20 lb propane tanks*
- *The electricity used by a typical house in 9 days*

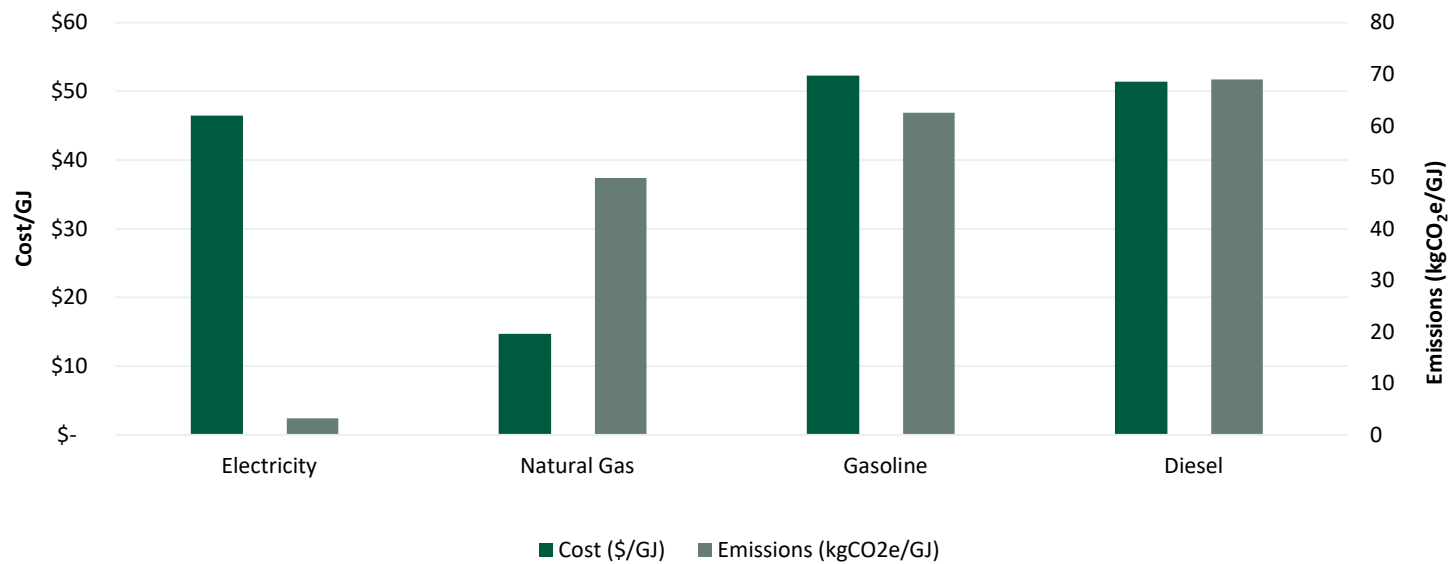
What is a tonne (tCO₂e) of GHG?

A tonne of greenhouse gases (GHGs) is the amount created when we consume:

- *385 litres of gasoline (about 10 fill-ups)*
- *A month of natural gas winter heating*
- *Enough electricity for 8.5 average homes for a year (93,700 kWh)*

Figure 4 shows the emissions and cost³ per gigajoule for each fuel source consumed by Fort St. James in 2022. Electricity has the lowest emissions per unit of energy, but a relatively high cost. Natural gas has the lowest cost per unit of energy, but relatively high emissions. Gasoline and diesel both have high emissions and costs. The carbon tax will continue to increase prices of natural gas, gasoline, and diesel.

Figure 4 – Emissions and Cost per Gigajoule by Fuel Source, 2022



³ Energy costs includes all taxes and basic charges.

Breakdown and Trends

Figure 5 shows the District of Fort St. James’ emissions by LGCAP classification and Public Works. Since 2018, the District’s emissions have fluctuated between 232 tCO₂e and 292 tCO₂e, with an overall decrease of 12% from 2018 to 2022. Public works consistently contributes the most to Fort St. James’ GHG emissions, typically around 59% of overall emissions. However, this category has decreased significantly (-17%) since 2018, both in transportation and building emissions. About 80% of Public Works’ emissions are from transportation, while the remaining 20% are from the Public Works Shop.

Arts, Recreation and Cultural Services are the next largest source of emissions, typically about one-quarter of total emissions. These emissions are mainly from natural gas usage in the arena and the community hall.

Figure 5 – Emissions by LGCAP Classification, 2018-2022

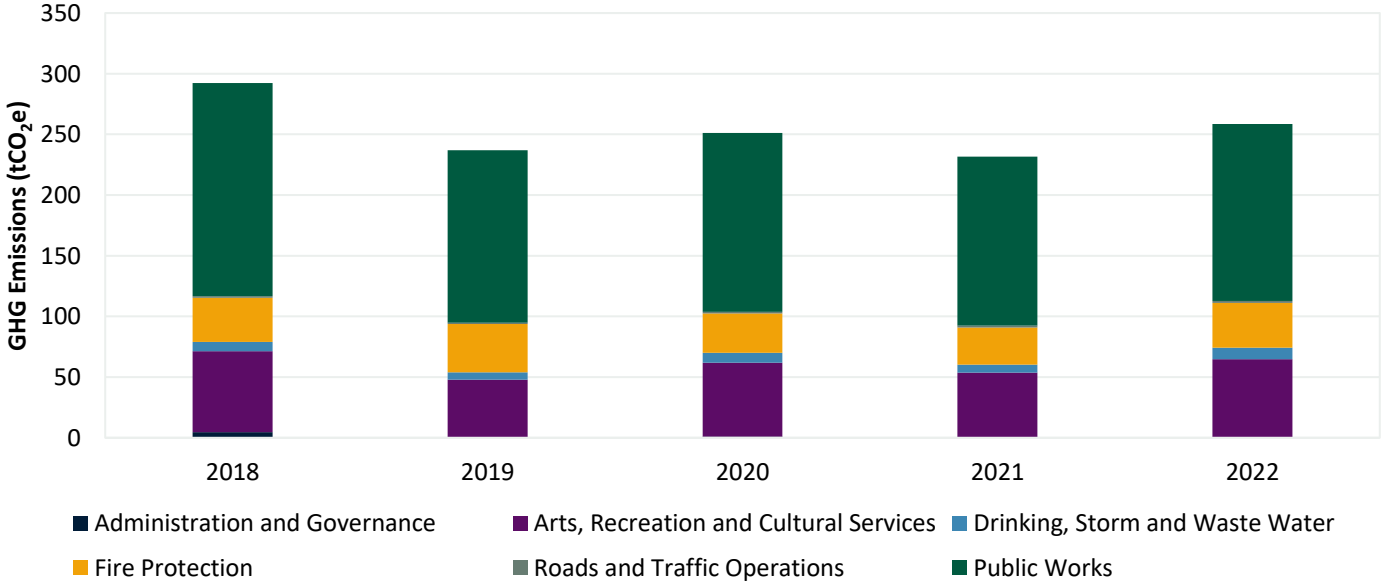


Figure 6 show the District’s energy usage and expenditures by LGCAP classification and Public Works. Public Works, Arts, Recreation and Cultural Services, and Roads and Traffic Operations are each responsible for about one-quarter to one-third of energy and expenditures each year. Most of the energy demand and expenditures in Public Works are from transportation, while Arts, Recreation and Cultural Services costs are from buildings, and Roads and Traffic Operations are from streetlights.

The per capita energy usage ranges 4.8-5.8 GJ, while the per capita cost ranges from \$169-\$212. While overall and per capita energy use was highest in 2018, the overall and per capita costs were highest in 2022. This is a result of rising energy prices. Energy prices are very difficult to predict, but have generally trended upwards in past years, and therefore CEA forecasts a continued rise for most fuels.

Figure 6 – Energy Usage and Costs by LGCAP Classification

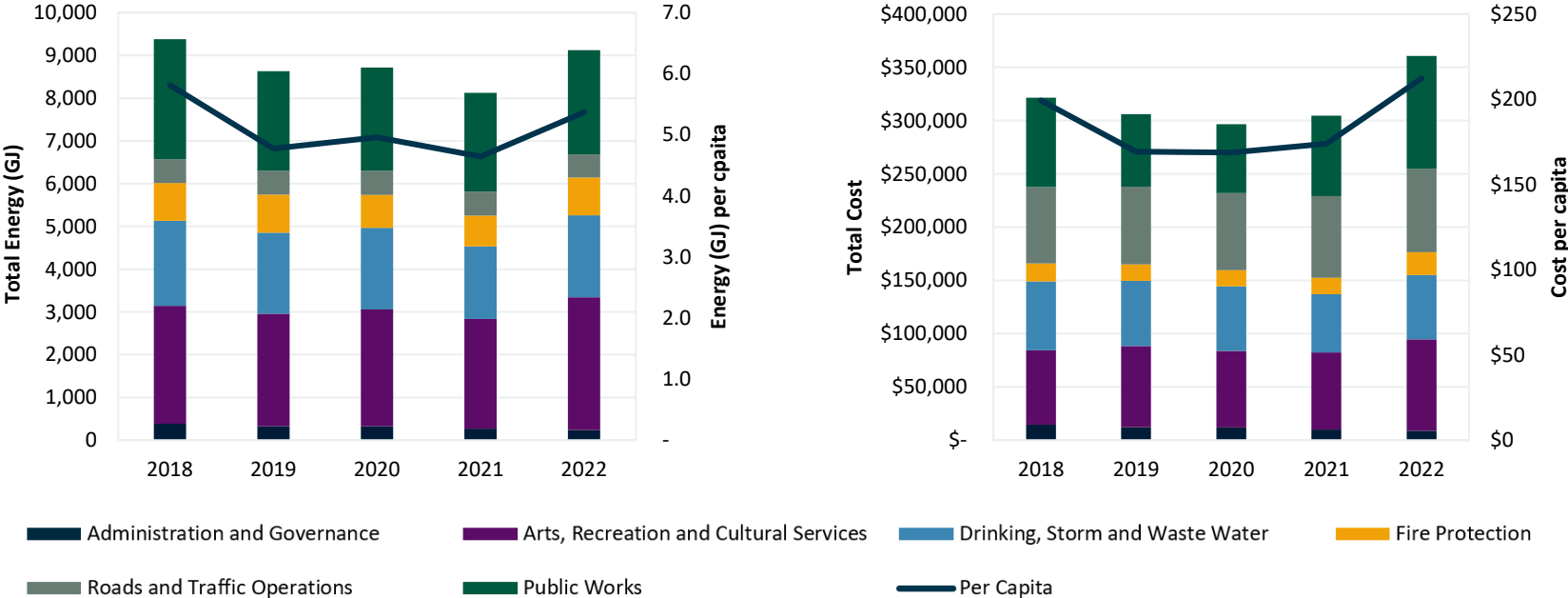


Figure 7 shows the percentage of energy consumption, GHG emissions, and energy expenditure that is attributed to each fuel source. Electricity contributes to just over half of the energy demand and 63% of cost, but only 6% of emissions. Large electricity users include the Lagoon and the Arena. As for emissions, natural gas is responsible for the largest portion (44%), followed by diesel (36%).

Among fuel sources, natural gas has high GHG emissions but low cost. This is in stark contrast to electricity which has very low GHG emissions but high cost. Gasoline and diesel have both high GHG emissions and high cost. These comparisons were shown earlier in Figure 4.

Figure 7 – Energy, Emissions, and Cost by Fuel Source, 2022

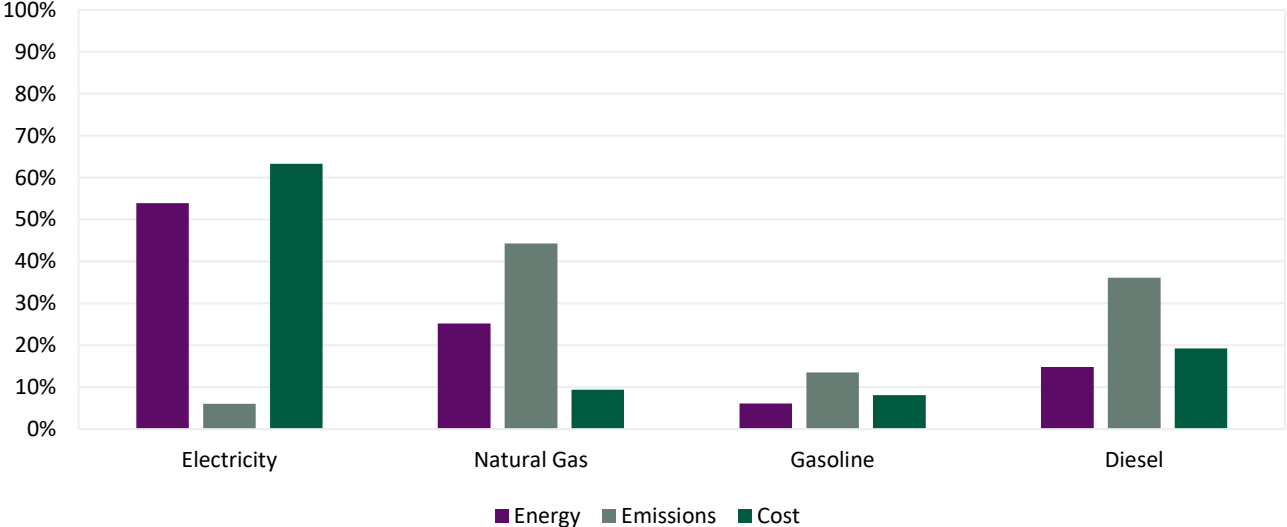


Figure 8 shows the emissions and expenditures for 2022. Natural gas accounts for the largest portion of emissions (115 tCO₂e, 44%), while diesel produces the 2nd highest portion at 36% (93 tCO₂e). These two fuels account for 80% of emissions but less than a third of expenditures (29% combined). Electricity, which contributes only 6% of emissions, is responsible for nearly two-thirds of the costs, costing the District \$228,348 annually. This is due to a low emission factor and relatively high costs. The emissions and costs per unit of energy for each fuel are provided in Figure 4.

Figure 8 – Emissions (tCO₂e) and Energy Costs by Fuel Source, 2022

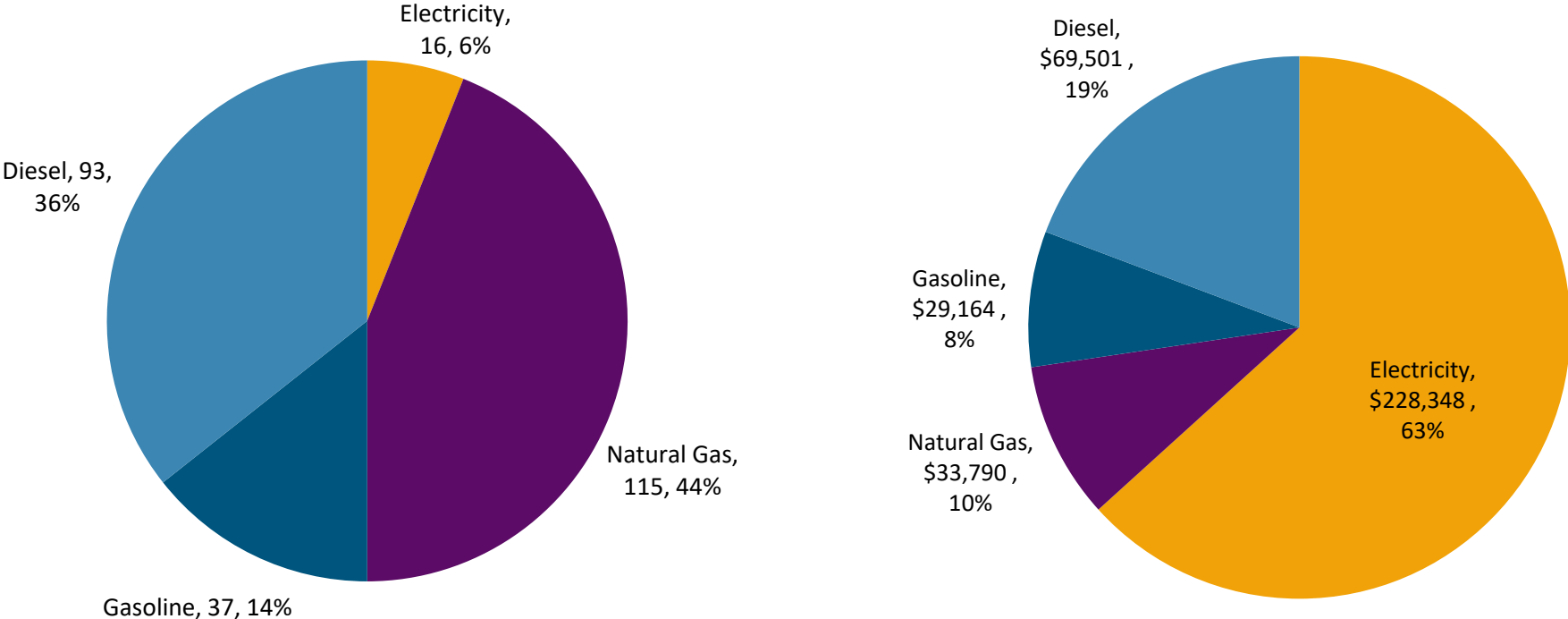


Figure 9 – Top 5 Buildings & Infrastructure for Energy, Emissions and Cost, 2022

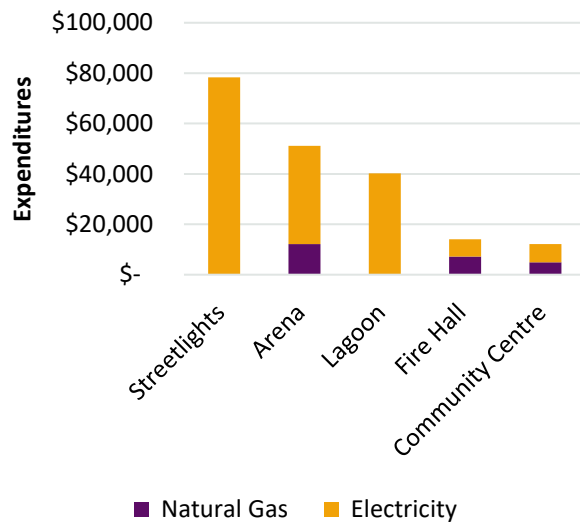
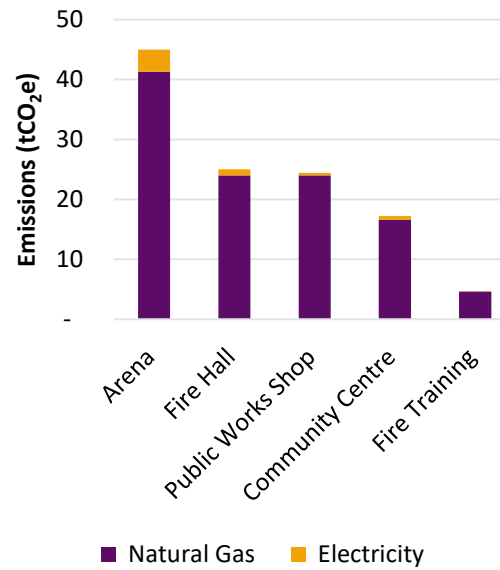
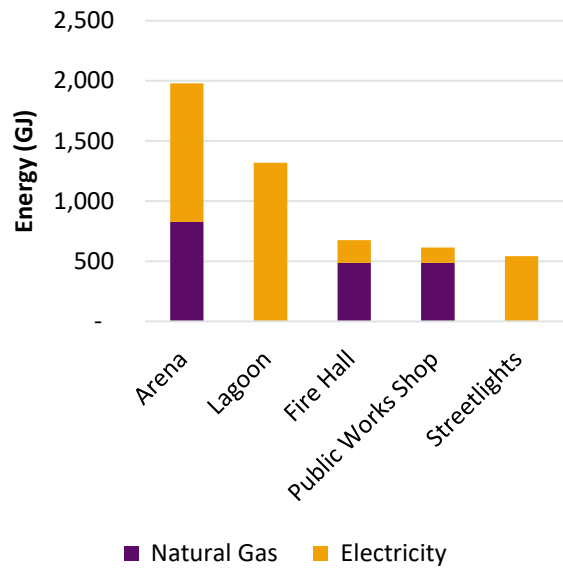


Figure 9 shows the top five buildings and infrastructure in terms of energy consumption, GHG emissions, and energy costs. For each category, the top five facilities are responsible for about half of Fort St. James' total energy, emissions, and cost.

The Arena consumed the most energy (1,978 GJ), was the highest emitter (45 tCO₂e), and the second-greatest cost (\$51,170). The Fire Hall and Public Works shop are the second highest emitters, both almost entirely resulting from natural gas. In terms of cost, the streetlights are the highest cost (\$78,309), followed by the Arena (\$51,170), and the Lagoon (\$40,166).

Natural gas has higher emissions per gigajoule while electricity has a higher cost. In the Arena, for example, electricity is responsible for about 60% of the energy demand, but less than 10% of emissions and over three-quarters of expenditures.

While a significant portion of streetlights have already been replaced with LEDs and don't provide much room for improvement, the other District assets shown on the left should be a priority in order to maximise GHG emissions and cost reductions.

The District has two additional buildings, the Curling Club and Music Makers Hall, that are excluded from the inventory. Even though the District owns them, they do not pay the bills and therefore are excluded under LGCAP reporting requirements. However, these buildings should still be considered for energy-reduction actions. The table below highlights the energy, emissions, and expenditures in 2022 for both facilities, showing that they both fall within the top five emitting buildings, and that the curling rink falls within the top five expenditures.

Table 2 – Energy, Emissions, and Cost for Curling Club and Music Makers Hall, 2022

Building	Fuel	Energy (GJ)	Emissions (tCO ₂ e)	Cost
Curling Rink	Electricity	510	2	\$18,352
	Natural Gas	444	22	\$6,476
	Total	954	24	\$24,828
Music Makers Hall	Electricity	37	0.1	\$1,773
	Natural Gas	134	6.7	\$3,253
	Total	171	6.8	\$5,026

Corporate vs. Community Inventories

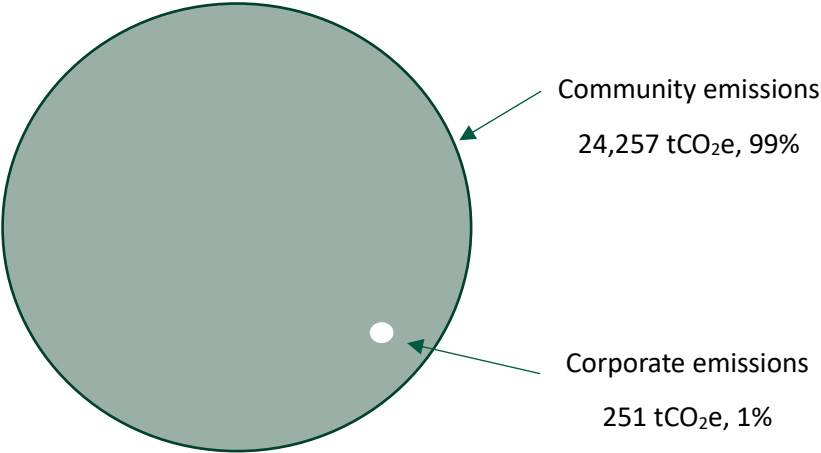
In 2020, the District of Fort St. James community GHG emissions were 24,257 tCO₂e. Corporate GHG emissions in 2020 were about 1% of the community total.

Community

- Community-wide energy use
- Use local government levers of infrastructure, policy/regulation and outreach/engagement to impact community energy and emissions
- Transportation, buildings and waste are the areas of focus

Corporate

- Municipal facilities and operations
- Detailed energy information
- More emphasis on immediate actions
- Corporate actions can be anchor community-wide projects



Business As Usual Projections

Business As Usual (BAU) projections for the District's inventory are shown in this section.

What does Business as Usual mean?

Business as Usual, or BAU, is a way of describing what is estimated to happen if the District does not try to reduce emissions going forward. A number of factors are taken into account, similarly to a Community Energy and Emissions Plan. Population growth and the subsequent growth in corporate assets is a very important consideration. As the number of people increase in a community, more corporate assets are needed to serve them. Some growth impacts, such as new vehicles and facilities, will happen in stages, but the projected impacts are spread across all years.

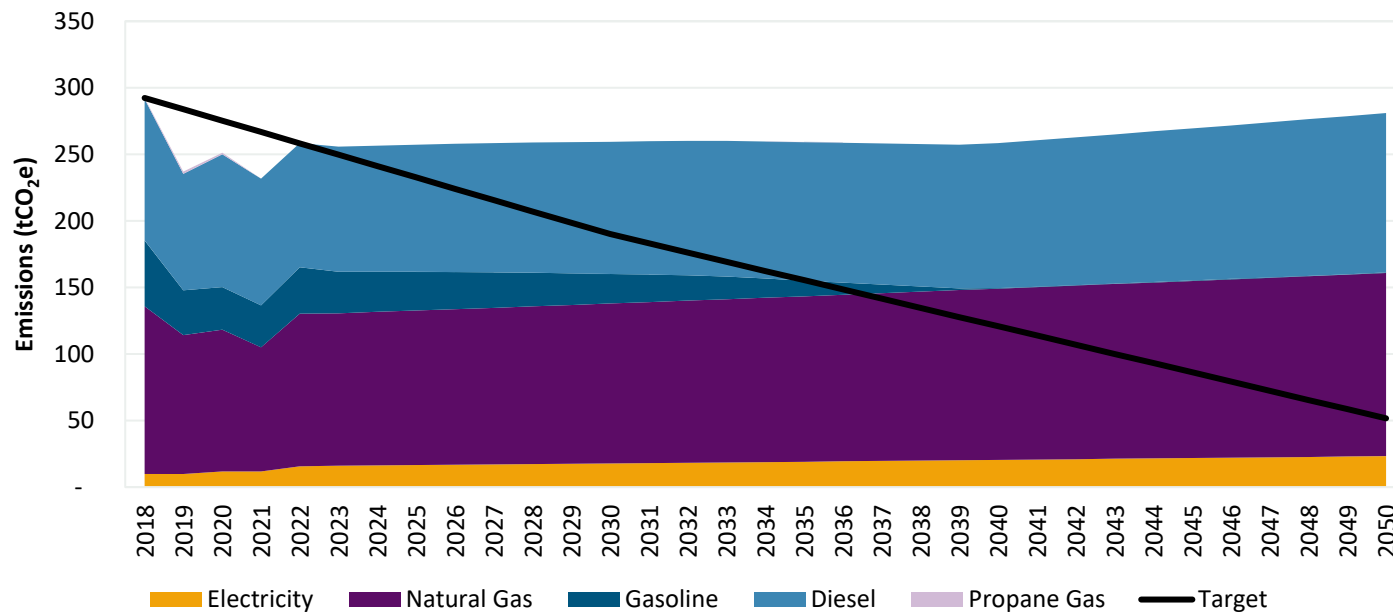
Other things that are taken into account include:

- Changing climate patterns, as warmer winters and hotter summers change the way that energy is consumed in corporate buildings.
- Impacts of policies already adopted by higher levels of government, such as:
 - Renewable and low carbon fuel standards
 - Vehicle emissions standards
 - That progressive policies on electric vehicles will have an impact on the District's purchases for gasoline vehicles, in particular the Zero Emissions Vehicles mandate.
 - The greening of the BC Building Code (progressive steps towards net zero energy ready buildings by 2032)

BAU assumptions are available in Appendix E.

If the District of Fort St. James implements no special efficiency or conservation activities, and assuming that future changes are proportional with population increase, then the District’s emissions are forecast to decrease by 13% in 2030 and 10% in 2050 compared to 2018 levels as shown Figure 10. The District is proposing to adopt a new short-term target of 35% reduction by 2030 and long-term GHG emissions reduction target of 80% reduction by 2050, both compared to the 2018 baseline.

Figure 10 – Business-As-Usual Emissions Forecast to 2050, by Fuel Source



It is difficult to predict these future increases, but it is clear that an increasing population will provide upward pressure, while the policies from higher levels of government will provide downward pressure on GHG emissions. Even with an annual population growth of only 0.95% and large impact from the Zero Emissions Vehicles mandate, the overall trend is still upwards from 2022. Therefore, it is prudent for the District to conduct its own measures (i.e. implement the actions detailed in this Plan) to manage its energy consumption, GHG emissions, and energy expenditures.

What We Can Do: Recommended Climate Actions

Based on staff consultation and best practices, 17 actions were identified to be implemented. Actions fall under the following five categories.

1. **New Buildings and Infrastructure:** Improve energy performance and lower GHG emissions in *new* District buildings and infrastructure
2. **Existing Buildings and Infrastructure:** Improve energy performance and lower GHG emissions in *existing* District buildings and infrastructure
3. **Renewable Energy:** Increase the use of renewable energy
4. **Transportation:** Improve energy efficiency and reduce GHG emissions in the District’s fleet
5. **Enabling Actions and Corporate Leadership:** Institutionalise the plan and demonstrate leadership on waste and water

Table 3 shows the breakdown of actions by category and the suggested timeline for each action. Implementation of these actions is dependent on funding availability and will consider the District’s fiscal responsibility.

Table 3 – Climate Actions Summary

ACTIONS LIST		Already Done	Short Term	Long Term
Existing Buildings				
1.1	Conduct building energy audits		X	
1.2	Implement building energy retrofits		X	
1.3	Incorporate energy management into annual building maintenance procedures		X	

ACTIONS LIST		Already Done	Short Term	Long Term
New Buildings and Infrastructure				
2.1	Commit to building energy efficient facilities (including mandatory Step Code implementation)			X
2.2	Commit to building energy efficient infrastructure (e.g. updating subdivision servicing bylaw)			X
2.3	Optimize siting and orientation of new buildings			X
Renewable Energy				
3.1	Implement renewable energy installations			X
3.2	Low-carbon heating retrofits for buildings			X
Transportation				
4.1	Right-size vehicles for assigned tasks		X	
4.2	Develop a low carbon vehicle purchasing policy		X	
4.3	Invest in low carbon and renewable fuels for corporate fleet			X
4.4	Fuel efficient driver training & anti-idling policy	X		
4.5	Implement an employee Transportation Demand Management program		X	
Enabling Actions and Corporate Leadership				
5.1	Allocate funds for plan implementation (e.g. LGCAP grant, budget allocation, revolving fund)		X	

ACTIONS LIST		Already Done	Short Term	Long Term
5.2	Develop KPIs, monitor and track for progress		X	
5.3	Annual reporting on GHGs		X	
5.4	Manage waste creation & water consumption			X
5.5	Climate action education and awareness for staff		X	

Further details on actions are detailed in Appendix A.

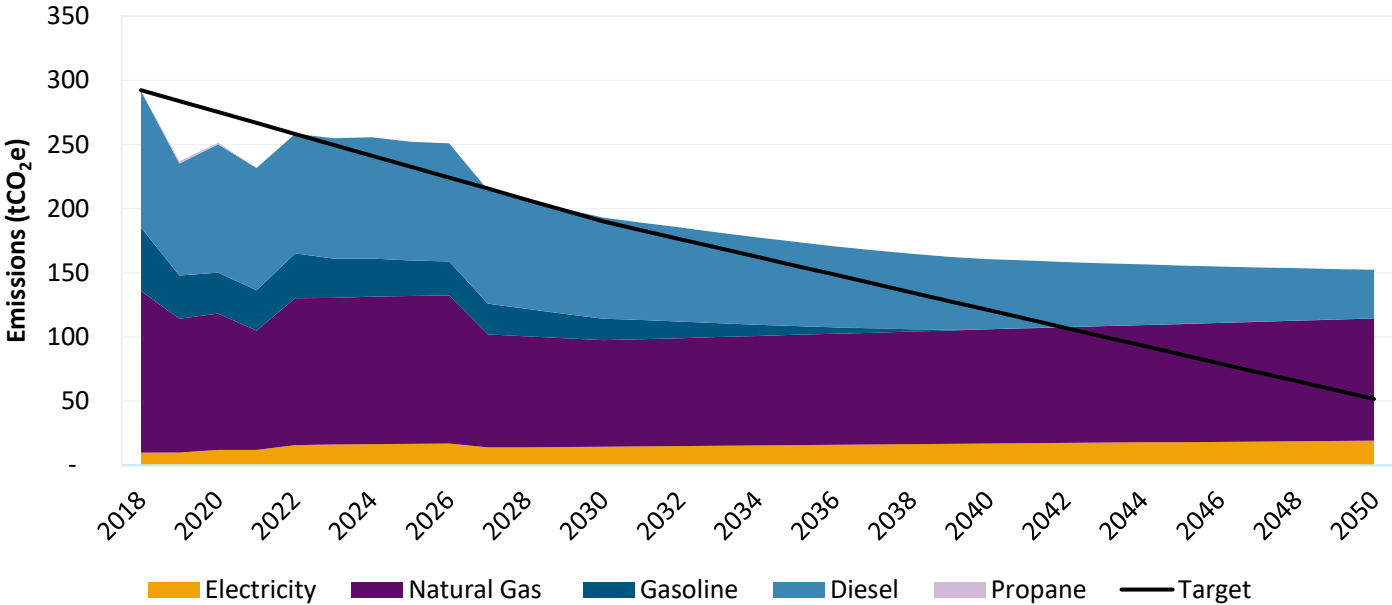
What We Can Achieve

Modelling Climate Actions

Implementation of the actions was modelled to estimate the potential GHG emission reductions and energy expenditure savings. Action impact numbers are calculated through a number of assumptions and educated estimates based on CEA's experience; more detail on the modelling is in Appendix E.

As shown in Figure 11, upon full implementation, total GHG emissions are expected to decrease relative to 2018 by 35% in 2030 and 47% by 2050. GHG emissions are expected to plateau from 2040 unless further actions are implemented. It is important that this Corporate Energy and Emissions Plan be updated again in about 5 years to identify new actions to implement to keep the District on track with its long-term target of 80% reduction below 2018 by 2050.

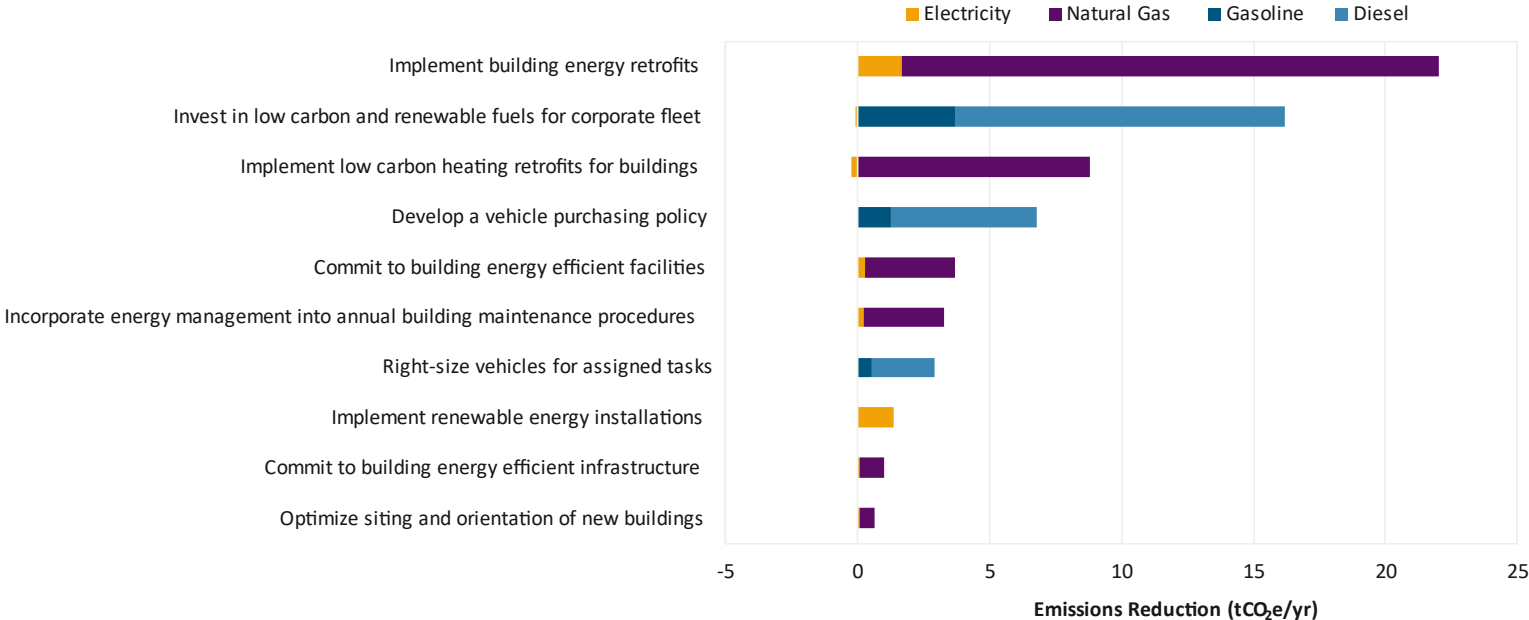
Figure 11 – Modelled Emissions from Proposed Climate Actions



As depicted in Figure 12, the top three actions that will achieve the largest reductions in GHG emissions in 2030, in order of largest GHG reductions first, are:

- Implement building energy retrofits
- Invest in low carbon and renewable fuels for corporate fleet
- Implement low carbon heating retrofits for buildings

Figure 12 – Emissions Reduction For each Proposed Action, in 2030



Implementing building energy retrofits will consist of measures to improve energy efficiency, such as air sealing and insulation upgrades. Building retrofits may also lead to the installation of low carbon heating systems, such as heat pumps, as shown in the 3rd action. Investing in low carbon and renewable fuels for the corporate fleet will reduce the District’s consumption of gasoline and diesel and therefore result in reduced GHG emissions from fleet vehicles.

Figure 13 highlights the potential GHG savings resulting from full implementation of the plan. Targeting natural gas use provides the largest opportunity for GHG reduction, followed by diesel and gasoline.

Figure 13 – Plan GHG Savings

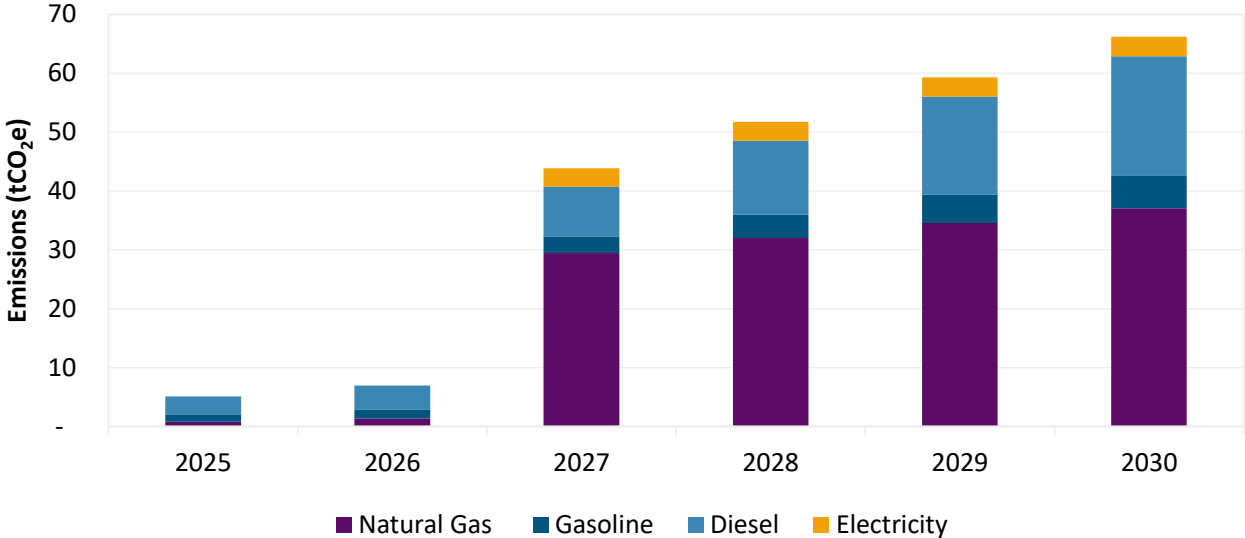


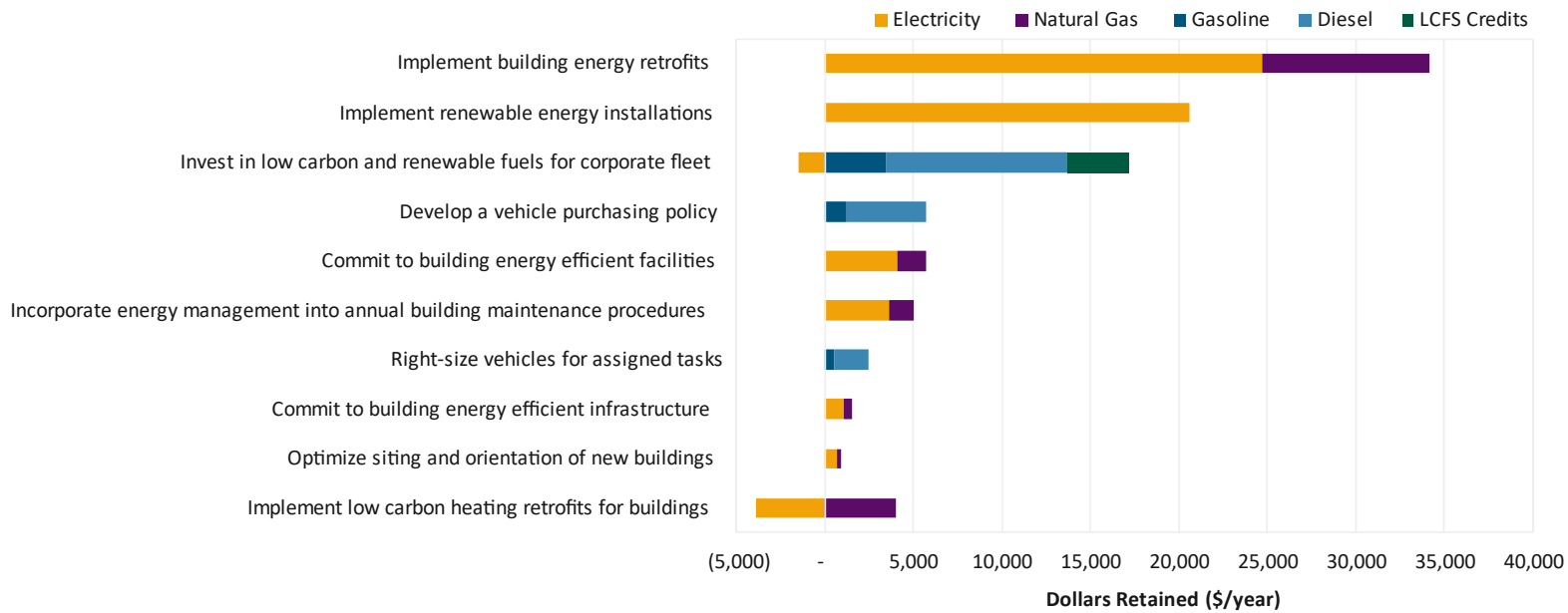
Figure 14 shows the estimated cost savings from each proposed action. These estimates do not reflect the capital cost or payback of each action; more work will be needed to determine this prior to implementing these actions.

Implementing building energy retrofits will result in the highest cost savings and will consist of measures to improve energy efficiency. The financial case for reducing natural gas usage through energy efficiency and fuel switching to electricity will continue to improve as the carbon tax continuously increases the price of natural gas.

Implement renewable energy installations is the next highest action, which assumes installations on one to three of the District’s largest electricity-consuming facilities, followed by investing in low carbon and renewable fuels for corporate fleet which includes the selling of Provincial Low Carbon Fuel Standard (LCFS) credits.

Low Carbon Fuel Standard (LCFS) Credits can be claimed as part of the BC Low Carbon Fuel Standard when conventional fuels are replaced with lower carbon fuels. These credits are bought and sold on a credit market and can significantly improve the business case for low carbon vehicles. To claim this credit, the amount of fuel must be quantifiable.

Figure 14 – Cost Reduction For each Proposed Action, in 2030 ⁴



⁴ This chart provides estimated fuel cost savings but does not reflect the lifecycle cost for each action.

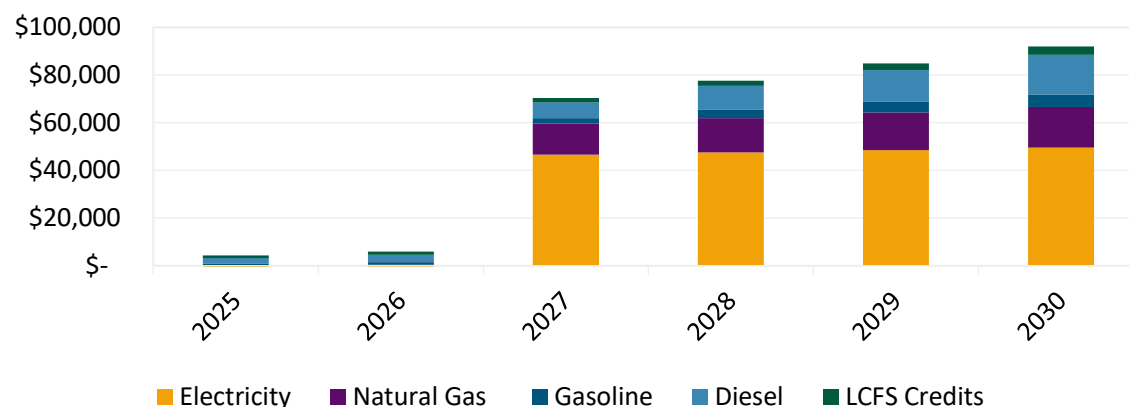
Since some of the recommended actions consist of electrification, there is concern around power outages. The table on the right shows the BC Hydro power outage data⁵ from 2021 and 2022. Of the 22 Northern region communities listed, Fort St. James was the sixth highest for interruption duration and eighth highest for interruptions per customer. This data highlights the importance of increasing energy efficiency in buildings to limit heat loss during power outages, as both electric and natural gas heating systems will be down. Energy storage is another potential solution; funding opportunities from BC Hydro are included on page 36 and 39.

Year	Average customer interruption duration	Average number of interruptions per customer
2021	3.34 hours	5.5
2022	4.77 hours	5.43

Table 4 – BC Hydro Reliability Performance, 2021 and 2022

Figure 15 shows the financial savings that could be realised upon implementation of the plan. Actions will be implemented over time, as per Table 3, and therefore savings will increase over time. There is potential for substantial cost savings on electricity, a majority coming from energy efficiency upgrades in buildings and renewable energy installations.

Figure 15 – Plan Cost Savings⁶



Overall, the Plan is expected to save 74 tCO₂e and \$94,200 annually by 2030 in corporate GHG emissions and energy costs.

⁵ <https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/community/northern-region-annual-report-2022.pdf>

⁶ This chart provides estimated fuel cost savings but does not reflect the lifecycle cost for each action.

Implementation for Success

Several key factors are important for the successful implementation of energy and emission reduction plans based on research conducted by CEA, QUEST, and Smart Prosperity.⁷ Among others, they include establishing broad support for implementation, building staff and financial capacity for implementation, and institutionalizing the plan in order to withstand political and staff turnover.

The District of Fort St. James has political and staff support for climate action. The District does not, however, have a policy on funding GHG emissions reductions, nor does it have a staff position focused on climate action.

Funding sources that communities typically use for climate action are shown below. External funding sources should be pursued where available to accelerate action. The internal funding sources that the District sets aside can be used to leverage external funding to great effect.

Internal Funding Sources

- LGCAP rebate allocated for climate action
- Allocation from operating budget (e.g. 0.1% annually)
- Climate action revolving fund
- Internal price of carbon (example: Regional District of Kootenay Boundary set \$25 per tCO₂e that goes towards a reserve fund for climate action)
- Low Carbon Fuel Standard (LCFS) credits
- Forgone revenue (e.g. offer scaled discounts on building permits for “greener” buildings)
- General revenue (e.g. property taxes)
- Recycling and solid waste user fees
- Building permit fees and other service fees charged by Development Services
- Water utility fees

What is a Climate Action Revolving Fund?

Climate action revolving funds invest in energy efficiency projects to reduce energy consumption and hence energy expenditures. Energy cost savings are then reinvested in future projects. They are called “revolving funds” because all or a portion of the savings from previous projects are used to fund new projects, and fund “revolves” in this way. Two local governments in BC have implemented such a fund, Summerland and Vernon. BC Crown Corporations have also implemented these, e.g. Health Authorities. Although conceptually intuitive, they can be difficult to implement in practice.

⁷ Community Energy Implementation Framework, <https://questcanada.org/project/getting-to-implementation-in-canada/?dc=framework>

Funding Opportunities for Decarbonizing Buildings

Funding	Target	Eligibility	Amount	Opportunity
<u>FCM GMF Study and Capital Project: Retrofit pathway for municipal buildings</u>	A study and capital project to reduce GHG emissions in municipal buildings over time.	Any existing municipal building. Aim to reduce emissions from the municipal building by at least 50% within 10 years and achieve best practice energy targets within 20 years.	Study: Grant for up to 50% of eligible costs. Up to a maximum of \$65,000 for a single building, up to \$200,000 for multiple buildings. Capital Project: Maximum \$10 million. Up to 20% as a grant and the remainder as a loan. Combined loan and grant for up to 80% of eligible project costs.	Retrofits at the Community Centre, Arena, Library, District Office, Curling Rink, and/or Public Works Shop
<u>FCM GMF Study and Capital Project: Construction of new sustainable municipal and community buildings</u>	A study and capital project for a new, low-carbon municipally owned building.	Includes retrofits of municipal buildings and new builds of municipal and community buildings. Municipal buildings should meet best practice energy targets and achieve zero operational GHGs.	Study: Grant for up to 50% ⁸ of eligible costs. Up to \$200,000. Capital Project: Maximum \$10 million. Up to 15% as a grant and the remainder as a loan. Combined loan and grant for up to 80% of eligible project costs.	New low-carbon Fire Hall
<u>BC Hydro Business Energy-Saving Incentives</u>	Funding for energy-efficient equipment upgrades	Lighting, HVAC, refrigeration, and mechanical technologies	About 25% of the upfront costs (on average) through energy-saving incentives.	All buildings

⁸ Municipalities with a population of 10,000 or under may qualify for a grant of up to 80 percent of eligible project costs

<p><u>PNG Smart Energy Solutions Programs</u></p>	<p>Funding for dual-fuel systems and energy efficiency upgrades</p>	<p>Available to commercial customers to install an electric air source heat pump (ASHP) and integrate it with an existing natural gas or propane furnace or boiler.</p>	<p>Commercial Dual-Fuel Space Heating System Program: Up to \$9k Commercial and Industrial Custom Efficiency Program: Up to 75% of project costs, up to \$200k</p>	<p>ASHP installation at the Public Works Shop, Arena, and/or Community Hall</p>
<p><u>BC Hydro Solar Panel and Battery Storage Rebates</u></p>	<p>Funding for grid-connected solar panels and battery storage system</p>	<p>Available to business customers installing new solar panels and battery storage.</p>	<p>Solar: \$1,000 per kW of installed capacity, up to 50% or \$25,000 Battery: \$500 per kWh of installed capacity, up to 50% or \$25,000</p>	<p>Lagoon, Library, Municipal Office, and/or Community Hall</p>
<p><u>Canada Green and Inclusive Community Buildings Program</u></p>	<p>Retrofits, repairs, and upgrades to existing community buildings and construction of new community buildings</p>	<p>Buildings must be in areas with underserved populations experiencing higher needs and be the site of Programming and/or activities that demonstrably serve these populations.</p>	<p>50-80% of eligible project costs</p>	<p>Community Hall, Library, and/or Arena</p>

Funding Opportunities for Decarbonizing Corporate Fleets

Funding	Target	Eligibility	Amount
<u>FCM GMF Study and Capital Project: Municipal Fleet Electrification</u>	Study and capital project to transition the municipal fleet to zero-emission vehicles.	The study must include: an assessment of the entire fleet, a fleet transition plan, an optimized scenario (right-sizing), an assessment of the supply of low-carbon (if applicable), and an equity assessment. The project should replace one or more existing vehicles with zero-emission vehicles.	Study: up to 200k, 50% of costs Capital: grant up to 15% of the loan; grant & loan up to \$10 million, up to 80% of eligible costs.
<u>Commercial Vehicle Pilot Program</u>	Funding for on and off-road zero emission vehicles and supporting infrastructure.	On-road weight class 3 and 4 must deploy a minimum of six ZEVs. Weight class 5 and 6 must deploy a minimum of three ZEVs Weight class 7 and 8 and off-road vehicle types have no minimum vehicle deployment number. Electric charging and hydrogen refueling infrastructure	Up to \$10 million, 33% of eligible project costs.
<u>BC Hydro Incentives: Electric Fleet Planning & Infrastructure</u>	Funding for professional planning and electrical infrastructure.	Must identify and lease or purchase at least six zero-emission vehicles within three years of submitting the infrastructure invoices.	Fleet Plan: Fleets less than 150 vehicles: A rebate of 50% of planning costs (excluding GST) up to a maximum of \$10,000. Infrastructure: Up to 50% of infrastructure costs, not including charging equipment.
<u>CleanBC Go Electric Fleet</u>	Financial assistance to design, procure, and install	Open to B.C. registered companies, non-profit organizations and public entities	75% of total costs, up to \$2,000, capped at \$50,000 per applicant per year.

Funding	Target	Eligibility	Amount
<u>Charging Program</u>	charging infrastructure, to be used by the fleet.		
<u>Federal ZEV Infrastructure Program</u>	Funding for charging or hydrogen refueling opportunities in public places, at workplaces, or for vehicle fleets.	For EV charging infrastructure projects must include: A minimum of one (1) charger of 200 kW and above; or a minimum of two (2) fast chargers of 50 kW and above; or a minimum of twenty (20) chargers of all charging levels	Up to 50% of total project costs, to a maximum of: Level 2: \$5,000 per connector Fast Charger: \$15,000-\$100,000 per connector

Municipal Finance Authority Implications of borrowing money from the Federation of Canadian Municipalities

Grants offered by the Federation of Canadian Municipalities (FCM) for plans or studies are untethered. All grants being offered by FCM for capital projects are only offered on the condition that money is borrowed from FCM, and this has implications for BC local governments as they are required to only borrow money from the Municipal Finance Authority (MFA). However, FCM funds can flow through the MFA and there have been instances of this in BC.

The MFA seeks to support local governments in accessing the lowest possible cost of capital, meaning that local governments can borrow from FCM if the cost of borrowing is preferable to the cost of borrowing from the MFA. A lower cost of borrowing may be accomplished by FCM when a grant is bundled with a loan.

Local governments should also consider the reporting requirements associated with FCM funding versus the MFA, which has next to no reporting.

Water Distribution Systems Funding

Community Works Fund allocates funding to all local governments in BC based on a per capita formula that includes a funding floor. It can be used towards eligible costs of infrastructure that supports drinking water conservation, collection, treatment and distribution systems.

BC Water Metering Pilot Programs were announced with the 2024 BC budget. The budget includes \$50 million for water metering pilot programs in 21 communities throughout B.C. that will inform the feasibility of establishing a universal water-metering program with the aim of better conserving water, identifying leaks, and educating users about their actual water use. Watch for future program application intakes.

Additional Funding

FCM Municipal Asset Management Program offers funding, training and resources to help strengthen asset management practices.

UBCM Asset Management Planning Program offers funding for asset management training, planning, and development.

Infrastructure Planning Grant Program offers up to \$10k to help local governments develop or improve plans such as asset management, integrated stormwater management, liquid waste management, and water master plans.

Canada Community-Building Fund, formerly the federal Gas Tax fund, is funding provided to provinces and territories to distribute to their municipalities to support local infrastructure priorities.

Federal government programs such as the **Low Carbon Economy Fund** and **Energy Innovation Program**.

BC Hydro Energy Storage Incentive offers funding for energy storage, with the condition that BC Hydro will have the ability to dispatch the energy storage in response to changing conditions on the grid.

BC Community Climate Funding Guide provides a comprehensive list of funding opportunities for local governments.

To support implementation, the District of Fort St. James should consider:

- Discussing climate action implications in all reports to Council.
- Dedicating funds to climate action annually as part of the operating budget and maintaining a reserve fund for larger climate action projects.
- Incorporating climate action into job descriptions of District staff. Climate action is the responsibility of all departments, and there is greater chance of success if responsibility is formally shared.
- Embed climate action into the budgeting process.
- Joining CEA's Peer Networks⁹ to learn and share knowledge with other local government staff.
- Monitoring indicators that are easy to track to help ensure that progress is being made.
- Host regular meetings to discuss implementation with internal and/or external stakeholders.
- Reporting on indicators as part of an annual report to Council.
- Incorporating this Plan into Fort St. James Strategic Plan and other plans.
- Renewing this plan in five years or sooner as objectives are achieved.

Implementation support services offered by CEA are described in Appendix B.

⁹ <https://www.communityenergy.ca/peer-networks/>

Monitoring and Evaluation

Monitoring and evaluating the implementation of the plan is critical for its success. Key Performance Indicators (KPIs) enable communities to measure the outcomes of a plan’s implementation. When KPIs are monitored regularly, communities can determine how to best allocate resources to support implementation, and the level of success of different actions.

Suggested indicators are shown in the template in Table 5. Two types of indicators are recommended. Primary indicators measure corporate GHG emissions, energy consumption and energy expenditure, while secondary indicators can quantify the indirect success of various actions.

The primary indicators of energy consumption, emissions, and energy expenditures for corporate operations can be easily and accurately tracked. Whilst these are the determinants of success, secondary indicators can still play a useful role in monitoring progress on climate action. Annual progress reporting should be planned by the District.

Table 5 – Primary and Secondary Indicators for Monitoring and Evaluation

INDICATOR	2024	2025	2026	2027	2028
Primary					
Corporate GHG emissions (tonnes CO ₂ e)					
Corporate energy consumption (GJ)					
Corporate energy expenditure (\$)					
Secondary - New Buildings and Infrastructure					
Number of new buildings or infrastructure projects conducted to higher energy efficiency projects					
Secondary - Existing Buildings and Infrastructure					
Number of energy assessments conducted on corporate buildings					
Number of energy efficiency upgrades installed on corporate buildings					

INDICATOR	2024	2025	2026	2027	2028
Secondary - Renewable Energy					
Installed capacity of renewable energy (kW)					
Secondary - Transportation					
Number of fleet vehicles that are electric, hybrid, or use other alternative fuels					
Number of employees that have completed fuel efficient driver training					
Secondary - Enabling Actions and Corporate Leadership					
Water consumption at specific corporate buildings (litres)					
Volume of waste at specific corporate buildings (cubic yards)					
Expenditures by Climate Action Revolving Fund (should one be created) (\$)					
Total value of incentives received (e.g. grants) for Plan implementation (\$)					

Abbreviations

ASHP	Air Source Heat Pump
BAU	Business as Usual
CAC	Climate Action Charter
CARIP	Climate Action Revenue Incentive Program (administered through the Province of BC)
CEA	Community Energy Association
CO ₂ e	Carbon Dioxide equivalent
EV	Electric Vehicle
FCM	Federation of Canadian Municipalities
GHG	Greenhouse Gas (there are several different anthropogenic GHGs and they have different relative impacts. When tonnes of GHGs are stated in the document the standard practice of stating this in equivalent of tonnes of carbon dioxide is followed.)
GJ	Gigajoules (one of the standard measures of energy)
GMF	Green Municipal Fund
HDD	Heating Degree Day, which measures the difference between the daily mean temperature and 18°C.
HVAC	Heating Ventilation and Air Conditioning
ICE	Internal Combustion Engine
IPCC	Intergovernmental Panel on Climate Change (an intergovernmental body of the United Nations dedicated to providing the world with an objective science-based view of climate change, its possible impacts, risks, and response options)
kg	Kilogram
KPI	Key Performance Indicator
kWh	kilowatt hours (standard measure of energy, typically used with electricity)

LCFS	Low Carbon Fuel Standard
LGCAP	Local Government Climate Action Program
LED	Light Emitting Diode
MFA	Municipal Finance Authority
MHDV	Medium and Heavy Duty Vehicles
OCP	Official Community Plan
PNG	Pacific Natural Gas
PV	Photovoltaics (solar panels that generate electricity)
RCP	Representative Concentration Pathway (four RCPs were adopted by the IPCC as scenarios for the 2014 Fifth Assessment Report, depending on how much GHGs are emitted in future years)

Appendix A. Climate Actions in Detail

This section provides details on each action proposed in the Plan. The textbox below explains how the values were calculated and defines each term and colour code used in the action tables.

How are action impact numbers calculated?

Action impact numbers are calculated through a number of assumptions and educated estimates based on CEA's experience. The impacts of individual actions on energy consumption are calculated for the year 2030. From this, GHG impacts and economic impacts are calculated using GHG intensity values and energy costs.

Actions may have further reaching impacts than the values stated here. Specifically, they demonstrate leadership and therefore may lead to GHG reductions and energy cost savings in the community.

What do the terms and colour coding mean in the actions tables?

This section provides details on each action proposed in the Plan. The textbox below explains how the values were calculated and defines each term and colour code used in the action tables. In Table 6, the terms refer to the following:

- Effort = staff time
- Costs = municipal costs
- GHG & economic impacts = GHG emission savings & financial savings in the year 2030
- Adaptation / resilience linkages = capacity for increased efficiency and enhanced outcomes through linkages to climate adaptation / resilience. An example of a high resilience linkage is energy independence and an example of a mild linkage is air quality.

And where there are no numbers, there is low/medium/high coding to help communicate expected impacts and implications. For the costs:

- Low = costs estimated to be \$500 or less.
- Medium = costs estimated to be in \$500-5,000 range.
- High = costs estimated to be \$5,000 or more.

Table 6 – Climate Actions in Detail

Existing Buildings

Action	Timing	GHG Impacts	Economic Impacts	Adaptation/ Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
1.1: Conduct building energy audits	Short Term	n/a	n/a	High	Medium	Medium	FCM	Building Maintenance
<p>The District will conduct energy audits of its buildings, beginning with those that consume the most energy and produce the most emissions. As the audits are completed, the District will then prioritize improvements based on audit results.</p> <p>The District may choose to prioritize projects based on energy cost savings or GHG emissions savings. The former is most likely to come from reduced electricity consumption whereas the latter is most likely to come from reduced natural gas consumption.</p> <p>An energy audit of the Public Works Shop may suggest PVC strip curtains on the bay doors to improve energy efficiency.</p> <p>Enhanced understanding of which buildings to prioritize for energy audits can be enabled by:</p> <ul style="list-style-type: none"> • The use of Energy Management Information System software, to track energy consumption and further criteria, such as energy use intensity (EUI) per building, identify anomalies in energy use, as well as track progress after energy conservation measures or retrofits. • Participation in benchmarking programs (e.g. Building Benchmarking BC), to compare your buildings against similar buildings throughout the Province and identify those that perform lower than average for further assessment. 								

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
1.2: Implement energy retrofits recommended by building energy audits	Short Term	22.0 tCO₂e	\$34.1k	High	High	High	FCM, BC Hydro	Building Maintenance

Upon completion of action 1.1, energy retrofits recommended by the energy audit reports should be implemented. A prioritization process will identify which projects to be completed first, based on energy cost savings or GHG emissions savings. Typically, energy retrofits that reduce electricity consumption will result in energy cost savings and energy retrofits that reduce natural gas consumption will result in GHG emissions savings. A project prioritization matrix can be found in Appendix F.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
1.3: Incorporate energy management into annual building maintenance procedures	Short Term	3.3 tCO₂e	\$5.1k	Medium	Low	Low	n/a	Building Maintenance

Annual maintenance and safety inspections provide a convenient opportunity to incorporate energy management objectives. Specific actions include:

- Check programming of thermostats and lighting controls
- Check and replace weather stripping on doors and windows as necessary
- Monitor annual energy consumption to identify abnormal energy use
- Assess condition and maintenance dates of HVAC and hot water equipment

Two sample checklists are provided in Appendix G.

New Buildings and Infrastructure

Action	Timing	GHG Impacts	Economic Impacts	Adaptation/ Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
2.1 Commit to building energy efficient facilities	Long Term	3.7 tCO₂e	\$5.7k	High	Low	Medium	FCM	All
<p>The District will commit to build new buildings that are energy efficient and have low GHG emissions. Appendix H contains “Guiding Principles for Climate Ready Municipal Buildings” The benefits of doing so are;</p> <ul style="list-style-type: none"> • Reducing risk by ensuring that the District owns assets that are “future proofed”, i.e. that will have low energy costs, low GHG emissions (and hence low carbon tax payments / low offset requirements), and will be resilient to a changing climate (e.g. hotter and smokier summers). • Reducing the need for buildings to be retrofit later. • Ensuring that the District owns and operates high quality, low maintenance assets. • Leading by example in the community on energy efficient building practices and ensuring that energy efficient best practices are disseminated throughout the community. 								

Action	Timing	GHG Impacts	Economic Impacts	Adaptation/ Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
2.2 Commit to building energy efficient infrastructure	Long Term	1.0 tCO₂e	\$1.5k	High	Low	Medium	n/a	Public Works

The District will commit to building the most energy efficient and low emission infrastructure that it reasonably can. There are multiple benefits to doing this:

- Reducing risk by ensuring that the District owns assets that are “future proofed”, i.e. that will have low energy costs, low GHG emissions (and hence low carbon tax payments / low offset requirements), and will be resilient to a changing climate (e.g., hotter and smokier summers).
- Reducing the need for infrastructure to be retrofit later.
- Ensuring that the District owns and operates high quality, low maintenance assets.
- Leading by example in the community by demonstrating best practices.

Appendix H contains a sample policy for “Climate Ready Infrastructure”.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation/ Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
1.3: Optimise siting and orientation of new buildings	Long Term	0.6 tCO₂e	\$0.9k	High	Low	Low	n/a	All, Project Manager

The District will commit to optimizing the siting and orientation of new buildings where possible. This includes optimizing orientation to benefit from passive solar gain and siting a building adjacent to a waste heat source if available. This action has the following benefits

- Reducing risk by ensuring that the District owns assets that are “future proofed”. I.e. that will have low energy costs, low GHG emissions (and hence low carbon tax payments / low offset requirements), and will be resilient to a changing climate (e.g. hotter and smokier summers).
- Reducing the need for buildings to be retrofit later.
- Ensuring that the District owns and operates high quality, low maintenance assets.
- Leading by example in the community on building best practices.

Many of these benefits are similar to 2.1 but can in some cases be realised for a lower cost and effort. For example, orientation of a building can ensure passive heat gain at cooler times of the year, while installing passive solar design features that will also reduce the summer heat gain.

Renewable Energy

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
3.1: Implement renewable energy installations	Long Term	1.4 tCO₂e	\$20.6k	High	Medium	High	FCM	Departmental Directors

The District will consider renewable energy installations on all new corporate buildings and look for potential existing buildings. Renewable energy installations are often more cost effective when installed on new buildings or when replacements are necessary on an existing building. For example, installing solar PV when completing a roof replacement. This action has the following benefits:

- Reducing risk by ensuring that the District owns assets that are “future proofed”. I.e. will be resilient to a changing climate (e.g. hotter and smokier summers). Pairing battery storage with solar PV will also increase resiliency in the event of a power outage.
- Reducing the need for buildings to be retrofit later.
- Ensuring that the District owns and operates high quality, low maintenance assets.
- Leading by example in the community on building best practices.

At minimum, when a building is re-roofed, it should be made solar-ready. This is low cost but can significantly reduce the cost of a solar installation later.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
3.2: Low-carbon heating systems for buildings	Long Term	8.5 tCO ₂ e	\$0.2k	High	Medium	High	PNG, FCM	Building Maintenance, Directors of each departmental building
<p>Building energy audits as described in action 1.1 may identify opportunities to retrofit low-carbon heating systems. Similarly, low carbon heating systems should be considered for all new corporate buildings. Low-carbon heating systems may include air-source heat pumps and waste heat recovery. This action could lead to substantial GHG emissions savings. Action will tie-in with asset management and building maintenance/inspection programs at the District.</p>								

Transportation

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
4.1: Right-size vehicles for assigned tasks	Short Term	2.9 tCO₂e	\$2.4k	Low	Low	Low	FCM	All
<p>A municipal fleet contains a wide array of vehicle types and sizes. Vehicle fuel economy (litres/100km) varies widely between vehicle types. An appropriately sized vehicle should be used for each task to reduce fuel consumption.</p> <p>The District will create a vehicle use policy and institutionalise it.</p>								

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
4.2: Develop a low carbon vehicle purchasing policy	Short Term	6.8 tCO₂e	\$5.7k	Low	Low	Low	n/a	Corporate, Finance
<p>A vehicle purchasing policy should be created and implemented. The policy should ensure that new vehicles are evaluated based on:</p> <ul style="list-style-type: none"> • Anticipated usage of vehicles (e.g. engine size, vehicle weight, load capacity, passenger capacity, and routes / operational terrain) • Life cycle considerations (e.g. life cycle emissions, residual costs / values of vehicle being replaced, capital costs, maintenance costs, fuel costs including fuel being used, resale values) <p>The objective is to ensure that all vehicles have the lowest GHGs / are the most energy efficient, that still meet minimum service requirements with some contingency. Low carbon vehicles would be considered as part of this. A template is provided in Appendix H.</p>								

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
4.3: Invest in low carbon and renewable fuels for corporate fleet	Long Term	16.1 tCO₂e	\$15.8k	Low	Medium	Medium	FCM	Public Works, Corporate Services

The District will assess the potential of renewable fuels such as biodiesel and ethanol for its corporate fleet. The District will request a quote for renewable fuels when tendering for fuel contracts annually.

When light-duty vehicles are due for replacement, the District will consider purchasing a low carbon vehicle rather than a traditional ICE vehicle. The District will consider the full life-cycle costs including fuel and maintenance when comparing the two vehicle types for purchase.

The District will report and sell Low Carbon Fuel Standard (LCFS) credits earned from the use of low carbon fuels.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
4.4: Fuel efficient driver training & anti-idling policy	Done	n/a	n/a	Low	Low	Low	n/a	Public Works

The most cost-effective way to reduce fleet emissions is through operator behaviour. The costs to implement an efficient vehicle use program will likely be more than offset by the direct savings on fuel purchases. The District will include this action as part of yearly training, or staff training plans. It will be included as part of new employee training. Training will be tracked in the employee's personal folder.

An anti-idling policy will continue to be implemented by the District.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
4.5: Implement an employee Transportation Demand Management program	Short Term	n/a	n/a	Low	Low	Low	n/a	All
<p>This action encourages staff to reduce single occupancy vehicle commuting and work-related travel by promoting walking, cycling, and carpooling, and providing workplace amenities (i.e. bike storage, showers) and supports (i.e. emergency ride home program). Furthermore, travel needs can be reduced through attending off-site meetings virtually.</p>								

Enabling Actions and Corporate Leadership

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
5.1: Allocate funds for plan implementation	Short Term	n/a	n/a	High	Low	Low	n/a	Finance, Corporate Services

There are a variety of mechanisms through which funds could be allocated to corporate climate action. LGCAP funds are one example. A revolving fund can be created whereby cost savings resulting from energy savings from project implementation go back into the climate action fund. Another option is an annual allocation of funds from the budget.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
5.2: Develop KPIs, monitor and track for progress	Short Term	n/a	n/a	High	Low	Low	n/a	Corporate Services

It is important to track energy consumption, energy expenditure and GHG emissions year over year to evaluate overall progress. However, some secondary indicators may also be helpful to monitor progress. A full list of primary and secondary performance indicators are provided in Table 5.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
5.3: Annual reporting on GHGs	Short Term	n/a	n/a	Low	Medium	Low	n/a	Corporate Services

Track annual emissions from buildings, transportation, and contracted services, as encouraged for LGCAP.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
5.4: Manage waste creation & water consumption	Long Term	n/a	n/a	High	Medium	Low	See page 40	All

Actions should be taken to reduce waste creation and water consumption at the corporate level. Demonstrating leadership at the corporate level may help to guide reductions at the community level. Examples include:

- Zero-waste target for corporate operations
- Best practices in water efficient landscaping
- Policies that discourage printing
- Planning purchases to minimize deliveries

Reduction in water consumption and waste creation will have minimal impact on corporate GHGs and energy expenditures but will reduce upstream emissions and other environmental impacts. Appendix C provides information for reducing energy use in water distribution systems.

Action	Timing	GHG Impacts	Economic Impacts	Adaptation / Resilience Linkages	Incremental Effort	Incremental Cost	Possible Partner/ Funder	Staff Responsibility
5.5: Climate action education and awareness for staff	Short Term	n/a	n/a	Low	Medium	Low	n/a	Corporate Services

Invest in education and professional development for all District staff on climate change, action mitigation, and climate adaptation.

Appendix B. Corporate Implementation Support

CEA offers a range of implementation supports that can help Fort St. James complete the actions proposed in this Corporate Energy and Emissions Plan. Current implementation offers, as shown in the table below, include support for transportation, buildings, renewable energy, and staff education.

CEA also offers corporate energy management services, to support communities to access programs and incentives for facilities and infrastructure energy assessments; strategic prioritization of projects; and assistance with implementation, such as grant applications and RFP processes. Match funding may be available, please contact CEA for more information.

Table 7 – Corporate Implementation Support

Corporate Energy and Emissions Plan Action(s)	CEA Implementation Support
Transportation	
4.3: Invest in low carbon and renewable fuels for corporate fleet	E-Mobility Education and Awareness Low-Carbon Fleet Assessments EV Charging Implementation Low Carbon Fuel Standard (LCFS) Credits
Existing Buildings	
1.1: Conduct building energy audits	Coordination of audits Incentive application process Project prioritization supports
1.2: Implement energy retrofits recommended by building energy audits 3.2: Low-carbon heating systems for buildings	Coordination of detailed studies and implementation incentives Grant writing services Procurement and RFP support

Corporate Energy and Emissions Plan Action(s)	CEA Implementation Support
2.3 Incorporate energy management into annual building maintenance procedures	Implementation of Energy Management Information Systems Strategic Energy Management Plans Policy development
Renewable Energy	
3.1: Implement renewable energy installations	Renewable energy business case studies (e.g. solar) Grant and incentive applications Procurement and RFP support
Enabling Actions and Corporate Leadership	
5.5 Climate action education and awareness for staff	Energy efficiency and low carbon technologies education for facilities and fleet staff Climate action education and awareness for staff Energy savings campaigns

Appendix C. Reducing Energy Use in Water Distribution Systems

Table 8 – Measures, Actions, and Resources to Reduce Energy Use in Water Distribution Systems

Key Measures	Examples of Actions	Resources
Improve pumping efficiency	<p>Switch to high efficiency motors for pumps with variable speed drives (VSD) (potential ~25% energy savings). Modern VSDs include flow measurement and energy monitoring functions.</p> <p>Schedule pumping at non-peak times of day (for cost savings where there are time of use rates), or at night to also reduce evaporation losses.</p>	<p>Industry article: Energy Savings in Water Systems</p> <p>USEPA: Energy Efficiency for Water Utilities</p>
Minimize leakage	<p>Pressure management: installing pressure valves at water inlets and outlets to better monitor the flow of water and pressures.</p> <p>Active leak detection: using a range of technologies, such as thermal imaging, satellite imaging, drone surveys, acoustic sensors, in-pipe monitoring and smart metering.</p>	<p>Review of leakage detection in water distribution networks</p>
Asset Management	<p>Monitor and replace ageing pipes and infrastructure.</p> <p>Account for future climate impacts, i.e. changes in temperature and precipitation and their impact on water distribution system operation and planning.</p> <p>Consider environmental and economic performance of pipe material and diameter i.e. lower mass and smaller diameter pipes can result in lower life cycle emissions and costs.</p>	<p>Water Distribution Systems Climate Change Risks and Opportunities</p> <p>Case study: design factors in Kelowna</p> <p>FCM Municipal Asset Management Program</p>

<p>Demand side management</p>	<p>Water meters and pricing structures.</p> <p>Public behaviour change campaigns on reducing water use.</p> <p>Incentives and rebates (e.g. water conservation kits, rain barrels).</p> <p>Watering restrictions (i.e. for summer months).</p>	<p>BC Climate Action Toolkit: Water and Wastewater</p> <p>Case study: water meters in Kamloops</p> <p>Water Conservation Guide for BC</p>
<p>Renewable energy</p>	<p>Micro hydroelectric power through energy recovery of downhill flows (where water is not pumped up a grade).</p> <p>Installing solar to offset electricity demand, and/or solar powered water pumps with battery banks.</p>	<p>BC Climate Action Toolkit: Renewable and recoverable energy generation</p>

Appendix D. Workshops Summary

Assessment			
Yes	No	Maybe	Already Done
<p>Depending on funding</p> <p>Conduct building energy audits</p> <p>Implement energy retrofits recommended by building energy audits</p> <p>Low-carbon heating retrofits for buildings</p> <p>Incorporate energy management into annual building maintenance procedures</p> <p>2 geothermal systems. They are getting a quote for a better maintenance plan. The systems never serviced well. And nobody in FSJ is trained to work on them. In Prince George, they are booked up solid all the time. When a problem comes up, then they are not available. Anybody downtown can fix a natural gas furnace, but nobody can fix a geoswitching heat pump. This is why there's the fear of going to new technologies.</p> <p>Right-size vehicles for assigned tasks</p> <p>Develop a vehicle purchasing policy</p> <p>There is an event/odd day bylaw for water conservation. Generally the parks are not watered. Recycling drink containers in community facilities. They aren't supposed to be taking commercial recycling. There might be potential. Imperative Recycling picks up from the District Office. All plastics, cardboard, paper, bottles and cans. They help them too. They lose their building to them for a dollar. And for their transportation needs they sometimes need their loader. And sometimes also give them a tax exemption. They are a non-profit.</p> <p>Develop KPIs, monitor and track for progress</p> <p>Manage waste creation & water consumption</p> <p>Even with the grants, it's tricky to implement certain initiatives due to funding.</p> <p>LGCAP only \$54k per year for 3 years.</p> <p>Allocate funds for Plan implementation (e.g. LGCAP, budget allocation, revolving fund)</p>	<p>Conduct energy-focused operational review of infrastructure</p> <p>They have been working on upgrading things already. Replacing old mowers, etc. There's probably not much that they wouldn't know already.</p> <p>Most of their vehicles are newer. Tire pressure monitors, etc. Probably no benefit to doing this.</p> <p>Conduct corporate renewable energy study</p> <p>Have dedicated staff person or department for plan implementation</p> <p>Examine local carbon offset projects for remaining emissions (or consider offset purchase)</p>	<p>Implement measures from operational review of infrastructure</p> <p>Energy-focused fleet maintenance (e.g. tire pressure, fuel & air system)</p> <p>Departments will share responsibility. Policies will stay in the office. A lot of things will be grant-dependent and who can find funding for actions. Time taken for funding...</p> <p>Join PCP</p> <p>Annual reporting on GHGs</p> <p>They have been trying for 3 years to get a lightning. He's not against trying one, but maybe they should come up with a municipal discount, instead of a premium charge, and no breaks on financing or cost of vehicle. If the grant wants us to try... they would love to try it. They have some concerns about maintenance. You need a dealership that's certified for this. With DVs you need technicians that are trained. PG probably cars, but in FSJ. And not sure about warranty problems.</p>	<p>Commit to building efficient facilities (may include Step Code implementation)</p> <p>Lighting to LED - arena & visitor centre. Slowly going through and changing places. Public works, shop lights. Arena is getting more energy efficient furnaces next year.</p> <p>Geothermal in arena, library, and the District office building. And neither of those systems work!</p> <p>Solar PV on 3 park washrooms.</p> <p>More fuel efficient dump truck and van.</p> <p>EV charging, they had a plan to put in EV chargers. But installation cost seems high.</p> <p>Wildfire Resiliency Plan</p> <p>Transfer station for recycling automated sprinklers to avoid daytime watering.</p> <p>Ongoing management of the community forest</p> <p>Tree planting at Cottonwood Park</p> <p>Fuel efficient driver training & anti-idling policy</p> <p>Provide facilities to help staff reduce the emissions associated with commuting to work</p> <p>Showers in most buildings already</p> <p>Encourage employee carpooling where possible</p> <p>Already do it. And everyone lives within 10 minutes of the office for carpooling in general.</p> <p>Invest in EVs and EV Charging Stations (where available and practical)</p> <p>Assess renewable fuel options for Medium & Heavy Duty Vehicles in fleet</p>

Arena has a new ice plant. Went in last year or the year before. Or 2021, so had some Covid cross over because arena couldn't be used.

Arena is reaching end of life. Having current discussions with engineers right now.

Library, could see some savings there. A repair should show some savings. It was built to supposed to be green. It's one of the newest. Built around the same time as the office, built around 10-15 years ago. If they work on the geothermal system there could be more opportunities. Same thing as District office.

Curling Rink the District doesn't pay the costs. The building is theirs.

Fire Hall is far past end of life. not worth putting money into.

Tourist info building has come & gone. Just got the building back from the Chamber. Haven't always paid the bills and don't have the data. It's an older log cabin.

PW shop could include in a study. It's older. The bay doors need to be opened now & again and the heat all escapes. There are high speed doors but they are very expensive.
*** Look into Bay Door options.

Community centre: Heating system could use an upgrade. There has been some management or unknown with thermostats, and that should help reduce the costs. So e.g. thermostats shut off in the summer. Was being heated and air conditioned at the same time.

Building had a major renovation 9-10 years ago. Used for rentals, meetings, movies. Still has a theatre within it. Community events, a lot of them go in to the ballroom in there. And used for their EOC as well. Has a lot of uses!

Community centre has an EOC. Neighbouring community has an emergency centre. And District has a generator already.

Could be an opportunity to look at solar and storage.

Frequent power outages. That's a concern for say EV charging. Wouldn't want to fire up a diesel generator to generate electricity for an EV. Have had power outages in areas for up to a week. So people usually have dual fuel wood / electricity / gas.

Is that one thing... if we have a connection with BC Hydro. If we can get the data on what the power outages are compared to the other areas.

Appendix E. Inventory and Modelling Assumptions

This appendix contains details on the corporate energy & emissions inventory and projections for the District of Fort St. James.

Inventories

Building and transportation inventories were created using energy data provided by the District. Electricity cost data was provided, natural gas costs were estimated based on current Pacific Natural Gas (PNG) rates¹⁰, and gasoline, diesel, and propane costs were estimated based on Kalibrate fuel cost data¹¹.

Emissions factors for inventory years are shown in Table 9, are sourced from the Province of BC¹². The electricity emissions factors include net electricity imports and are also sourced from the Province of BC¹³.

Table 9 – Emissions Factors

tCO ₂ e/GJ	2018	2019	2020	2021	2022
Electricity	0.0021	0.0021	0.0026	0.0027	0.0032
Natural gas	0.0499	0.0499	0.0499	0.0499	0.0499
Gasoline	0.0678	0.0660	0.0642	0.0633	0.0625
Diesel	0.0706	0.0699	0.0693	0.0691	0.0690
Propane	0.0612	0.0612	0.0612	0.0612	0.0612

¹⁰ <https://png.ca/business/rates/>

¹¹ <https://charting.kalibrate.com/>

¹² <https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2020-pso-methodology.pdf>

¹³ <https://www2.gov.bc.ca/gov/content/environment/climate-change/industry/reporting/quantify/electricity>

Projections

CEA's Corporate model was used both to calculate the BAU trajectory, and to estimate the potential GHG reductions that could be achieved. Developed in 2019, the model builds on the District's inventory data using population and assumptions. The model uses formulas both to calculate the BAU trajectory, and to estimate the impacts of each action.

The BAU trajectory was calculated by using available inventory data, and then projecting forwards using a population increase of 0.95% per year (the average annual increase between 2016 and 2021).

From 2023 onwards, all of the data is an estimate as a BAU projection.

For the BAU projection modelling, the assumption is that energy consumption and emissions will increase proportionally with increases to population, although the impact of policies from higher levels of government are also incorporated, and other assumptions. Only policies that have already been adopted and that will have quantifiable impacts are incorporated. Assumptions are:

- The Province's incremental steps to net zero energy ready buildings by 2032.
- Tailpipe emissions standards.
- Renewable & low carbon transportation fuel standards.
- How the impacts of a changing climate will affect building energy consumption, as outlined below.
 - Climate change data for the region obtained from ClimateData.ca.
 - Projected global emissions to 2030 currently places the world in the range for the IPCC's Fifth Assessment Report's Representative Concentration Pathway (RCP) 6.0 scenario.
 - RCP 6.0 scenario not available on ClimateData.ca, therefore RCP 4.5 (high impact scenario) used as a conservative proxy.
 - Decreases in commercial / institutional natural gas consumption assumed to be proportional to decreases in HDDs and the proportions of natural gas consumed for space heating for the sector, and that proportion obtained from the Navigant 2017 Conservation Potential Review for FortisBC Gas.
 - Decreases in commercial / institutional electricity consumption assumed to be proportional to decreases in HDDs and the proportions of electricity consumed for space heating for the sector. This proportion obtained from the Navigant 2016 Conservation Potential Review for FortisBC Electric.

Annual variability affecting projections

Although CEA's model assumes that projections will be linear, there will be annual variability, primarily due to climatic variations (particularly on building energy consumption). These variations mean that it may often be necessary to collect several years of data before one can see the success or lack of it in implementation of an action, in the primary indicators. An exception to this will be streetlights, which have a remarkably similar consumption in each year, and so the impacts of actions taken should be immediately apparent.

Action impacts

To take into account the impact of implementing a climate action plan, the modelling tool estimates the impacts of actions compared to the BAU trajectory. It calculates the individual and combined impact of actions.

The impacts of individual actions depend on the assumptions made. CEA made educated estimates of the impacts that other actions can have.

Details on the impacts of individual actions on GHGs are described in the main body of this report, in Figure 12.

Appendix F. Sample Project Scoring Matrix

This section provides a sample project scoring matrix that can be used to prioritize funding allocation.

Project #	Date Reviewed

Reviewed By: _____

I. Project Overview	
Project Title	Analysed By:
	Name:
	Dept:
Project Lead:	Supporting Staff (if applicable):
Name:	Name(s):
Dept:	Dept(s):

II. Project Metrics		
	Annual Average	Life of Project
Emissions Avoided (tCO₂e)		
Financial Savings (\$)		

Simple Payback (yrs) after external funds:	Annual ROI (%) after external funds:	Cost per tCO ₂ e avoided (\$):
Project References / Success Examples:		

Category	Point Value	Poor 0.0	Fair 0.25	Acceptable 0.5	Good 0.75	Excellent 1.0	Total
Potential to Reduce GHG Emissions (50)							
Total GHG Reductions per \$ (Community funds only, after external funds)	20						
Annual GHG Reductions	10						
Lifespan of Project	10						
Replicability of Project within community	10						
Ease of Implementation / Business Case (30)							
Ease of implementation (staff time)	10						
Business case (simple payback or ROI)	10						
External funding sources likelihood	10						
Other Considerations (20)							
Impacts to Health and Safety	5						
Project Visibility/Innovation	5						

Benefits to Community	5						
Other Resources Conserved	5						
Total Points Available	100	Total Points This Application					

Other Key Criteria:

- Staff capacity
 - Project leads and project supports should each determine their capacity to take on projects.
 - Limit projects they take on to their capacity.
 - Select most effective projects first, to maximise effectiveness of staff capacity.

- District funds – budgeting
 - Departments should each determine the ability of their funds to pay for projects.
 - Limit projects based on available funds.
 - Select most effective projects first, to maximise effectiveness of departmental funds.

Appendix G. Sample Building Maintenance Checklists

Sample 1

Building System Optimization – Simple Energy Efficiency Retrofit Measures

Space Heating and Cooling

- Building envelope sealing – caulk and draught proof around windows and doors, and other gaps on exterior walls.

Lighting, Appliances and Equipment

- Replace any remaining incandescent bulbs with LEDs.
- Improve safety and energy efficiency by converting Exit signs to LED. For Exit signs use LED products that maintain their brightness.
- Put vending machines on a vending miser – a device with a motion sensor so that it only switches on when people are present.
- Plug certain appliances into intelligent power bars with master/slave functions or motion sensors. These can be used for TVs, bench tools, compressors, task lighting, auxiliary heating, printers, coffee makers, microwaves, beverage coolers, or similar devices. (Appliances that need a controlled shutdown sequence, e.g. computers or many ink-jet printers, should not be plugged into such a power bar.)
- Unplug or remove unused or rarely used equipment (equipment that is not “on” may still use electricity).

Water – hot and cold

- Install aerators on taps in bathrooms and kitchens.
- Install low flow shower heads.
- Install timers, motion detectors, or flushes to save water with urinals.

- Install insulation on hot water pipes where accessible.
- Insulate domestic hot water tanks installed before 2005 (if they are not due for replacement).
- Turn down domestic hot water tank to lowest acceptable setting, e.g. 55°C (131 F).

Occupant engagement

- Dedicate a staff member on energy efficiency for each building, tasked with ensuring lights and equipment are off at the end of each day, and thermostats are correctly set.

Put up signs to:

- Remind people to switch off lights.
- Remind people to switch off equipment when not in use, including computers, monitors, printers, and photocopiers.
- Where there are programmable thermostats, explain how to use these without permanently overriding the settings (install lockable boxes around them if necessary).
- Encourage people to close window blinds when leaving a room.
- Encourage employees to participate in residential energy efficiency programs. If energy efficiency practices are adopted at home, they are more likely to be adopted in the work place.

Sample 2

MONITORING	
Each billing period	Ensure the energy consumption for bills of each facility is monitored by the local government as each bill arrives (recording of energy consumption needs to be conducted for the Local Government Climate Action Program public reporting anyway). Monitor the consumption for any obvious changes, comparing it especially with billing periods with similar weather, e.g. the same billing period in previous years. Large changes in consumption should be investigated as well as the appearance of any special charges, e.g. demand charges or power factor charges.
SPACE HEATING / COOLING	
Monthly	Check settings of Building Automation Systems / thermostats.
Monthly	Inspect, clean, and change HVAC air filters once a month (or according to equipment specifications).
Twice a year	Ensure building temperatures are adequate for building occupants.
Annually	Check weather stripping and caulking around doors and windows. Fix any problems.
Annually	Check HVAC equipment for any obvious signs of problems, e.g. vents/blowers not operating correctly.
Annually	Clean evaporator and condenser air conditioning coils – dirty coils can increase energy costs and reduce equipment life
Annually	Check air conditioner refrigerant levels – too much or too little refrigerant can increase energy costs and reduce equipment life.
LIGHTING, APPLIANCES, EQUIPMENT	
Twice a year	Ensure lights are still working. Ensure no incandescent lightbulbs are installed.
Twice a year	Ensure light sensors are working correctly, e.g. motion sensors for interior lights, and photosensors for exterior lights.
Twice a year	Ensure intelligent power bars and vending misers, where they are being used, are working correctly.
WATER – HOT & COLD	
Annually	Ensure low flow devices working correctly, e.g. timers for urinals.
Annually	Check hot water temperature. If water is too hot or cold, adjust the tank's settings.

OCCUPANT ENGAGEMENT	
Monthly	Check-in with dedicated staff member on energy efficiency for that building.
Twice a year	Ensure signs to encourage energy efficient behaviour (like switching off lights) are still in place.
Twice a year	Ensure posters and leaflets encouraging occupant participation in residential energy efficiency programs are still in the facility, and current. (If energy efficient practices are adopted at home, they are more likely to be adopted by occupants in the work place.)
VEHICLES	
Each winter	Ensure engine block heaters are on a suitable schedule. Experiment to find the optimum schedule for employee comfort and energy efficiency. E.g. on/off for 20 minutes, every 20 minutes, during the coldest months of the year.
SKILLS	
Annually, or every 2 years	Consider going on an energy efficiency course or sending a member of staff on one. Training and workshops may be available through FortisBC, or through professional associations.
SERVICE CONTRACTS	
At contract renewal	Ensure service contracts (where applicable) support energy efficient operations. Energy efficiency can be written in to contract terms during renewal.

Appendix H. Sample Policies

Green Fleet Policy Template

Adopted {insert date}

POLICY NUMBER:

CHAPTER:

SECTION: CORPORATE SERVICES / GREENHOUSE GAS EMISSIONS REDUCTION

SUBJECT: LOCAL GOVERNMENT GREEN FLEET POLICY

RESOLUTION:

EFFECTIVE DATE:

REVISION DATE:

1. RESOLUTION

THAT the Green Fleet Policy for the replacement and maintenance vehicles utilized by the Local Government be adopted.

2. OBJECTIVE

To formalize and clarify fleet replacement policies and practices and to support climate action policies to reduce GHG emissions and related pollutants by acquiring the most appropriate vehicle and equipment, minimizing fuel consumption, improving driver satisfaction and equipment life and reducing operating costs.

3. INTRODUCTION

- The Local Government shall utilize a green vehicle purchasing strategy in the replacement of vehicles.

- The **Local Government** utilizes a fleet of vehicles to support both general operations and service delivery.
- The **Local Government** will ensure that vehicles under its control are acquired, assigned, utilized, replaced and maintained in the most efficient and effective manner possible.

4. DEFINITIONS

Local Government vehicle - means any licensed motor vehicle owned, rented, borrowed, or leased by the **Local Government** and used primarily to transport people or property over roads, highways or **Local Government** property. Rental vehicles are considered **Local Government** vehicles when rented by a duly authorized employee and while used for official **Local Government** business.

Operator - means any authorized **Local Government** employee, or other individual approved by the Chief Administrative Officer (CAO), who is in control of a **Local Government** vehicle and who possesses a valid driver's license for the type of vehicle operated.

Fleet manager - means the individual designated by the CAO to manage the **Local Government** vehicles.

Specialty use vehicle - means **Local Government** fleet vehicles especially equipped for specific function or purpose.

5. RESPONSIBILITY FOR IMPLEMENTATION

There will be one fleet manager, appointed by the CAO, who will be responsible for overall fleet management. He/she will work with department managers to meet their department's fleet vehicle needs within approved financial plans.

6. GREEN FLEET VEHICLE POLICY

- a) As per the **Local Government**'s goal to achieve carbon neutrality in part by reducing corporate greenhouse gas emissions from fleet vehicles, the **Local Government** is committed to:
- Reducing GHG emissions;
 - Reducing emissions of other pollutants;
 - Reducing vehicle idling;
 - Reducing single occupancy trips;
 - Purchasing more efficient vehicles and fuels;
 - Right-sizing vehicles;
 - Considering life cycle costs of fleet vehicle operations when purchasing vehicles;
 - Maximizing vehicle efficiency.
- b) Vehicle Attributes: **Local Government** vehicles shall have the following minimum attributes:
- Be right-sized for its intended purpose(s).
 - The ability to securely haul materials and equipment required for intended purpose.
 - Air conditioning and all wheel drive/four wheel drive features, are optional and only where appropriate.
 - Colour =
 - Acceptable fuel mileage for the anticipated use. The use of electric vehicles, plug-in hybrids, hybrids, vehicles that use other low GHG fuels, and fuel efficient vehicles, with the intent of reducing the **Local Government's** carbon footprint, are required wherever operational requirements allow.
 - Acceptable crash/safety ratings.
- c) Right-Sizing Purchasing: **Local Government** vehicles should be purchased according to the average or usual anticipated use of the vehicle. Occasional vehicle needs that exceed the capacity of the vehicle purchased should be met through vehicle sharing or renting. The following use requirements should be considered when purchasing a vehicle:
- Engine size;

- Vehicle weight;
 - Average carrying capacity;
 - Average passenger capacity;
 - Average terrain.
- d) Life Cycle Cost: Life cycle costs should be considered for all vehicle purchases. Life cycle costs should include: capital costs, maintenance costs, fuel costs and resale costs.
- e) Fuel Choice: The lowest GHG emission fuel possible should be purchased for all vehicles in the fleet. Consideration of fuels should include:
- Purchasing vehicles that run on low GHG fuels, e.g. electricity, hydrogen, biodiesel, bioethanol, natural gas. The focus should be on electric, plug-in hybrid, and hydrogen vehicles.
 - Purchasing low emission fuel for fleet vehicles that cannot be electric or plug-in electric (i.e. renewable natural gas, gasoline with a high percentage of bioethanol and diesel with a high percentage of biodiesel);
 - Purchasing vehicles with an acceptable fuel consumption mileage for the anticipated use. The use of electric vehicles, hybrids and fuel efficient vehicles, with the intent of reducing the **Local Government's** carbon footprint, is required wherever operational requirements allow.
- f) Operating: Fleet vehicles shall be operated with the following considerations:
- Idling shall be reduced among all fleet vehicles and the following guidelines shall be followed by all fleet vehicle operators:
 - a. Reduce warm-up idling (no more than 30 seconds as long as windows are clear);
 - b. Vehicles are to be turned off when stopped for more than 10 seconds except in the following circumstances: in traffic; in the course of performing a specific duty that requires the vehicle be left running; if the outside temperature is below -10°C; or if doing so would compromise human safety or the mechanical integrity of the vehicle.

- Vehicle sharing shall be encouraged. Single occupancy vehicle trips will be minimized. Vehicles should be shared between departments to ensure maximum efficiency for vehicle use.
 - Driver education and driving procedures to increase the efficiency of vehicle operations, including anti-idling, should be included in driver training programs for **Local Government** staff.
- g) Vehicle Maintenance and Monitoring: Fleet vehicles shall be operated with the following considerations:
- All **Local Government** vehicles shall be kept in good mechanical condition and shall be inspected at required intervals.
 - Maintenance on fleet vehicles should continue to ensure that preventative maintenance continues to maximize the efficiency of all vehicle operations.
 - All vehicles shall be monitored to track fuel consumption, fuel costs, mileage and maintenance costs.
- h) Vehicle Replacement and Acquisition:
- In general **Local Government** vehicles will be considered for replacement when they have at least 5 years of service and 150,000 kilometres. Vehicles may be retained beyond this point if they are in good working order and are meeting the needs of the **Local Government**. Alternatively, vehicles that have excessive maintenance, carbon emissions, other air pollutant emissions, or operating costs may be replaced sooner.
 - All vehicle replacements are to be identified in the approved Financial Plan.
 - All **Local Government** vehicles shall be purchased in accordance with the **Local Government** purchasing policy.
 - All vehicles shall be acquired in a manner consistent with budgetary intent.
- i) Consider joining programs to assist with reducing fleet GHG emissions

Green Purchasing Policy Template

Adopted {insert date}

POLICY NUMBER:

CHAPTER: FINANCE

SECTION: EXPENDITURES

SUBJECT: GREEN PURCHASING POLICY

RESOLUTION:

EFFECTIVE DATE:

REVISION DATE:

1. RESOLUTION

THAT the Green Purchasing Policy to require energy considerations of product selection, life cycle costing in operational decision making and encourage green procurement be adopted.

2. OBJECTIVE

To support **Local Government** corporate initiatives with respect to sustainability and environmental stewardship, including the **Local Government**'s corporate GHG reduction targets.

3. INTRODUCTION

The Green Purchasing Policy requires that energy considerations and life cycle costing inform product selection and purchasing decisions and encourages green procurement. Products are chosen based on best overall value, not just the lowest price.

4. POLICY

- a) The **Local Government** will buy in the open market and will seek the best value and service for its purchasing dollars. The placement of orders and awarding of contracts will be based on best value to the **Local Government**.
- b) Purchasing decisions are to be based on the life cycle cost of the acquisition rather than just the initial purchase price. Life cycle costs include operation, repair, staff, and disposition costs as well as the invoice price.
- c) In order to minimize the **Local Government**'s environmental impact and carbon footprint, staff will review their requirements to ensure that specifications are amended to provide for use of goods and services with lower environmental impact and specifically to follow the steps to sustainable purchasing, life cycle costing and energy efficient equipment purchasing.

5. STEPS TO SUSTAINABLE PURCHASING

In considering future purchases, the **Local Government** will follow the steps to sustainable purchasing in product selection and decision-making:

- a) Rethink purchase – is it necessary?
- b) Rent, lease or buy it second hand.
- c) Choose a durable or longer-life product and compare cost to disposable product.
- d) Choose products or services designed to address specific environmental or social concerns.
- e) Choose suppliers committed to sustainability.
- f) Calculate the total cost (i.e., storage, maintenance, need to buy additional equipment, energy use, waste disposal, administration).
- g) Reduce the transportation impacts.

6. LIFE CYCLE COSTING PURCHASING

In considering future purchases, the **Local Government** will undertake life-cycle costing in determining the full cost of a product or service. Steps in life cycle costing include:

- a) Compare the costs of different products and different purchasing choices.
- b) List and compare the accessory activities and costs associated with owning a particular product, such as: storage, maintenance, accessory equipment, operating costs, energy and water use, environmental hazards, waste disposal, training and administration.
- c) Purchase based on total costs. Total cost = acquisition + use + disposal and post-disposal costs.

7. ENERGY EFFICIENT EQUIPMENT PURCHASING

The **Local Government** shall purchase energy efficient equipment, supplies and appliances whenever possible. This requires that product specifications be compliant with ENERGY STAR® guidelines and recommendations and/or Natural Resources Canada guidelines and recommendations.

Energy efficient equipment includes but is not limited to: appliances, HVAC equipment, electric motors, office equipment, lighting and signage, transformers, consumer electronics, vending machines, etc.

The **Local Government** purchase of energy efficient equipment has the following potential benefits:

- Reduced energy costs and electricity demand;
- Reduced impact on the environment;
- Reduced life cycle cost;
- Extended life and reduced operation and maintenance costs; and
- Manufacturer, government or utility company purchase incentives.

Green Event Policy Template

Adopted {insert date}

POLICY NUMBER:

CHAPTER:

SECTION:

SUBJECT: LOCAL GOVERNMENT GREEN EVENT POLICY

RESOLUTION:

EFFECTIVE DATE:

REVISION DATE:

1. RESOLUTION

THAT the Green Event Policy to reduce the environmental impact of events hosted by the Local Government be adopted.

2. OBJECTIVE

To support climate action policies to reduce GHG emissions, waste, and other environmental impacts by reducing the impacts of Local Government hosted events.

3. INTRODUCTION

The Green Event Policy requires that GHG and environmental considerations inform how events are conducted, not just the lowest price.

4. POLICY

a) The following are discouraged and encouraged:

Discouraged	Encouraged
Disposable items, including plates, cutlery, cups, single-use water bottles	Reusable dinnerware, and water jugs of local tap water with glasses
Disposable give-away items / prizes	Service-based prizes
Bleached paper napkins	Paper napkins with recycled content
Single-use condiment packets	Reusable containers/squeeze bottles
Garbage-only receptacles	Labeled garbage, recycling, compost receptacles
Food and drink with non-recyclable packaging	Minimal packaging or recyclable packaging
Disposable shipping boxes	Reusable shipping containers
Cellophane wrap and polystyrene	Reusable serving trays/platters
Disposed extra food	Composted or donated
Imported produce	Seasonal, regional produce (where available)
Non-edible garnishes	No garnishes or edible garnishes

Guidelines are meant as guidelines only and all applicable food, health and safety regulations must be met.

Guiding Principles for Climate Ready Municipal Buildings

Adopted {insert date}

POLICY NUMBER:

CHAPTER:

SECTION: GREENHOUSE GAS EMISSIONS REDUCTION / CLIMATE CHANGE ADAPTATION

SUBJECT: GUIDING PRINCIPLES FOR CLIMATE READY MUNICIPAL BUILDINGS

RESOLUTION:

EFFECTIVE DATE:

REVISION DATE:

1. RESOLUTION

THAT the Policy on Guiding Principles for Climate Ready Municipal Buildings, to evaluate GHG emission reduction and climate adaptation potential in Municipal buildings, be adopted.

2. OBJECTIVE

To ensure that all new **Local Government** buildings are built to have as low GHG emissions as possible, and are built to be resilient to forthcoming climatic changes. Also to ensure that all existing **Local Government** buildings have their GHG emissions reduced on an ongoing basis, and are able to be resilient to forthcoming climatic changes.

3. INTRODUCTION

The **Local Government** is committed to corporate and community energy and GHG reductions, and to being resilient to climatic changes. Therefore it will establish a procedure to build and operate all **Local Government** buildings with the lowest GHGs possible, and ensure that they will be able to continue to operate effectively when considering predictions of coming climatic changes that will likely take place over their lifespan.

4. POLICY

New Civic Buildings:

- a) Aim to construct carbon neutral corporate buildings, e.g. by following Canada Green Building Council's Zero Carbon Building Standard.
- b) Incorporate high performance attributes into new civic buildings so that they meet the highest level of the BC Energy Step Code and strongest requirements of the Zero Carbon Step Code for its building type. If the building type is not included in the Energy Step Code, choose the appropriate alternative energy standard:
 - Meeting or exceeding ASHRAE 90.1-2022 (for all other building types)
 - National Energy Code for Buildings (NECB) 2020
 - LEEDv4 or v4.1 Energy Performance requirements
- c) Aim to build with materials with low embodied carbon emissions, e.g. favouring sustainably sourced wood, or low GHG concrete over conventional concrete.
- d) Consider forthcoming climatic changes that are likely to occur over the lifespan of the asset in its design and construction.

Existing Civic Buildings:

- e) Follow sustainable operation and maintenance best practices guidelines for new and existing buildings, which emphasize conservation, optimized building performance, and continued improvement in energy use, water efficiency, and indoor environmental quality.
- f) Maximize energy and operational efficiency through the selective re-commissioning of civic facilities on an on-going basis. Re-commissioning is a form of quality assurance testing that is carried out to ensure that building physical plant systems operate as effectively as possible given occupancy patterns and building function.
- g) Strive for GHG emission reductions at all existing civic facilities on an ongoing basis through conducting energy assessments and implementing the recommended measures.

- h) Strive for continual decreases in corporate building greenhouse gas emissions through the above measures to help meet municipal GHG reduction targets.
- i) Strive to ensure that buildings are equipped to be resilient and effective over the course of forthcoming climatic changes that are likely to occur over their remaining lifespan.

Climate Ready Infrastructure

Adopted {insert date}

POLICY NUMBER:

CHAPTER:

SECTION: GREENHOUSE GAS EMISSIONS REDUCTION / CLIMATE CHANGE ADAPTATION

SUBJECT: ENERGY RECOVERY OPPORTUNITIES POLICY

RESOLUTION:

EFFECTIVE DATE:

REVISION DATE:

1. RESOLUTION

THAT the Climate Ready Infrastructure Policy to evaluate GHG emission reduction and climate adaptation potential in the planning of **Local Government** infrastructure assets be adopted.

2. OBJECTIVE

To operate and manage **Local Government** infrastructure assets, including natural ones, in a manner that conserves energy, reduces greenhouse gas emissions, and is resilient to climatic changes.

3. INTRODUCTION

The **Local Government** is committed to corporate and community energy and GHG reductions, and to being resilient to climatic changes. Therefore it will establish a procedure to build and operate all **Local Government** infrastructure assets with the lowest GHGs possible, consider natural assets, and ensure that infrastructure will be able to continue to operate effectively when considering predictions of coming climatic changes that will likely take place over the lifespan of those assets.

4. POLICY

On an ongoing basis, the **Local Government** shall evaluate opportunities to ensure that infrastructure assets have the lowest GHGs possible, and are resilient to climatic changes. The **Local Government** will also evaluate natural assets as part of its infrastructure assets, with the benefits these bring.

5. PROCEDURE

- a) The **Local Government** shall conduct energy studies for its existing grey infrastructure assets, and implement recommendations to reduce GHG emissions by as much as possible;
- b) Develop a natural asset inventory and expand the evaluation of nature-based solutions for infrastructure projects, including consideration of co-benefits such as carbon sequestration and wildlife;
- c) Build new grey infrastructure assets so that they have zero (or as low as possible) GHG emissions, and have as low operational energy costs as possible;
- d) Incorporate life-cycle costing into both the infrastructure capital and operational decision-making process;
- e) Consider embodied / life-cycle carbon emissions as part of all new infrastructure decisions.