



qathet  
REGIONAL DISTRICT

# *CORPORATE GREENHOUSE GAS REDUCTION STRATEGY PROJECT BACKGROUND REPORT*

Provided by GHG Accounting Services December 2019

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## 1 Executive Summary

This background report documents the results of the evaluation of GHG emission reductions of current and future activities undertaken by qathet Regional District (qRD). This project work will enable the Regional District to realize the goals of its Strategic Plan based on the Regional Sustainability Charter and make progress on its commitments under the BC Climate Action Charter. As a contributor to this process, this report contains a concrete suite of GHG emission reduction pathways and related actions that are suitable for consideration by the Regional District. These suggested pathways are informed by a strategic analysis of the Regional District's corporate GHG emissions inventory and by staff workshops.

The project work was embedded in the framework set by the Regional District's Strategic Plans for 2019-2022, incorporating relating goals in the Official Community Plans (OCPs) of the Regional District's electoral areas and the requirement to become carbon neutral under the BC Climate Action Charter in its corporate operations. Within this framework, five pathway area were identified based on the corporate service and infrastructures areas the District is managing:

- Waste Management
- Corporate Vehicle Fleet
- Transportation Infrastructure
- Other Infrastructure (In relation to Renewable Energy Generation)
- Natural Assets (In relation to Sequestration/)

The first two represent the two biggest sources of corporate GHG emissions and the last three represent the biggest GHG reduction/sequestration opportunities within the jurisdictional boundaries of the Regional District.

Each pathway outlines the suitable project activities for each area of service and lists examples of project activities. In addition, options for financial support are highlighted.

Based on the identified pathways, a separate policy document that recommends specific project activities for qRD is provided. The policy document will be a living document that will be reviewed every 2 years to reflect changes for the Regional District. In addition, the Regional District will be able to track and project progress on the corporate GHG reduction on the Local Carbon Registry to account for it's impact as well as it's progress.



## 2 Introduction

### 2.1 qathet Regional District

The qathet Regional District (qRD) is a local government authority in British Columbia (BC) incorporating 5 electoral areas and the City of Powell River. The qRD covers an area of 5,092 km<sup>2</sup> (666 mi<sup>2</sup>) located on the west coast of BC approximately 175 km north of Vancouver and within the traditional territory of the Tla'amin Nation. The boundaries stretch from Toba Inlet in the north, to Georgia Strait in the south, and from Jervis Inlet/Hotham Sound in the east to Homfray Channel/Desolation Sound on the west. Within these boundaries lie a large mainland area and Hernando, Lasqueti, Savary and Texada Islands. The qRD is enclosed by neighbouring Regional Districts—Comox Valley Regional District and Strathcona Regional District to the west, Squamish-Lillooet Regional District in the northeast, and Sunshine Coast Regional District in the southeast. The qRD provides services such as land use planning, emergency preparedness and 911, solid waste management, regional parks and fire protection to its residents.

### 2.2 Local Climate Actions

In a December 2009 report entitled “Act Locally – The Municipal Role in Fighting Climate Change” (the “Report”), the Federation of Canadian Municipalities (FCM) underscored the key role of municipalities in achieving significant and long-term GHG emission reductions. Given that local governments currently have direct or indirect control over approximately 44% of Canada’s GHG emissions, the impact of local GHG reduction initiatives cannot be underestimated. A major advantage of local emission reductions is that they can be achieved at a low cost. According to the Report, over 25% of these emission reductions can provide a neutral or positive return on investment, even without a price on carbon.

Local authorities play a key role among the various actors that need to implement measures locally. First and foremost, no other body in the political arena and beyond can claim such a direct influence on everyday life. Their influence on land use and planning, their control over public utilities and other public operations, and their significant influence on markets as a large customer for various goods all provide strong means to take climate action. Their unmatched closeness to citizens further allows them to lead by example, inspire action within their communities and lead citizens towards a lasting engagement for climate issues. To successfully tap into this potential, it is imperative for local governments to make climate action a high priority in all their activities.

## 3 Review of qathet Regional District’s Policies

### 3.1 qathet Regional District’s Strategic Plan

The qRD’s Strategic Plan for 2019 to 2022 was adopted by the Regional Board in 2019. The Strategic Plan identifies six corporate strategic priorities for 2019-2022. One of the six strategic priorities is “Climate Change.” Strategic Goals under this priority include; develop and



implement a GHG Reduction Strategy, develop and implement Climate Action Plans. Under the CARIP Climate Action/Carbon Neutral Progress Survey, one of the actions planned for 2016 was the development of a Corporate Greenhouse Gas Reduction Strategy.

The Strategic Plan was based on the vision and principles of sustainability expressed in the Regional Sustainability Charter signed in July, 2010 by the Regional Board, City Council and Tla'amin Council. The vision statement in the Charter asserts:

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*“Powell River is a strong, independent West Coast community, proud of our ability to work well together. Diverse values and experiences are respected, and relationships are cherished. All our basic needs are met and we have a rich social and cultural life that respects our history. We live in harmony with each other and with the natural environment, tending to its health while at work, at play, and at home. We are stewards for the future.”*

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The Regional Sustainability Charter provides a framework to guide land use and sustainability planning throughout the region. The charter includes the following broad goals that define the future to which the community aspires:

- **Local and renewable sources of energy:** Locally generated off-grid renewable energy is the main source of energy for Powell River, and the impacts of generation, transmission, and distribution on the ecosystem are minimized. Fossil fuels are used rarely, and emissions are reduced or captured.
- **Energy-efficient:** Buildings and vehicles are highly energy efficient, and people use energy wisely.
- **Actively restored terrestrial productivity:** Forestry practices encourage the forest ecosystem to become more diverse, resilient, and functional. Soil health is improved, and supports strong forests and agriculture.
- **Marine and aquatic health:** Ocean and freshwater ecosystems are robust and secure, and contribute significantly to local food production. Local salmon populations are restored to historical levels and have regained their key role in Tla'amin diet, culture and heritage.
- **Reduced consumption and waste production:** To reduce waste streams, and especially toxic wastes, the region's residents and businesses minimize their consumption, and focus on local products and materials that can be absorbed by the local environment or readily reused. Toxic materials are rarely and carefully used.
- **Sufficient, good quality water:** Water is used wisely to ensure an ongoing supply and good quality of surface water and groundwater, to serve both human and ecosystem needs.
- **Clean air:** Air pollution is minimized and air quality is high.
- **Environmentally sensitive land use:** Development and economic activity respects



natural systems and habitats. Natural and historical features are valued as environmental, aesthetic and economic assets and are incorporated into site designs causing minimal disturbance.

- **Learning and Development:** Our understanding of natural systems and the best way to preserve, restore or enhance them is continually growing through transfer of knowledge from Tla'amin elders, local researchers, and visiting experts.

### 3.2 Official Community Plans of Electoral Areas and the City of Powell River

Given the overarching framework by the Regional Sustainability Charter, the electoral areas and the City of Powell River each developed their own Official Community Plans (OCP). As each jurisdiction has its own land use planning authority, they have had autonomy over setting their own climate change and environmental objectives and policies. It was an important consideration in the development of the strategy to consider each OCP within the 5 electoral areas in order to adopt a streamlined emissions reduction strategy that avoids contradictions and instead creates synergy among the electoral areas as well as synergy between the corporate and community emissions reduction efforts.

Under Section 875 (1) of the Local Government Act, an official community plan is a statement of objectives and policies to guide decisions on planning and land use management within the area covered by the plan, while respecting the purposes of local government. Bill Bulholzer, author of Planning Law and Practice in BC, describes an OCP as a high level plan expected to enshrine principles that govern the overall direction and pace of development at a policy level.

In the qRD, electoral areas A (Savary Island with its own separate OCP), B, C, D and the City of Powell River have developed OCPs, which are publicly available as bylaws. Electoral area E has developed its own OCP through Islands Trust; Lasqueti Climate Change Vulnerability Assessment and Adaptation Plan is available on Lasqueti Island website. The OCPs all have a similar structure where community issues are organized under four themes: land use designation, infrastructure/community services, environment, and economic development. Each plan has objectives and policies that are anticipated to be implemented.

The OCPs include issues and services that are managed by the qathet Regional District as well as other jurisdictional services.

- Solid waste management is managed on a regional basis as is the case throughout BC
- Funding of the Powell River Public Library is provided by the City and the qRD electoral areas
- Funding for the Powell River Regional Transit System is provided by the City, the qRD and BC Transit
- The City's water supply comes from Haslam Lake in the qRD and will need to be managed cooperatively to protect the safety of City residents
- Regional Emergency Services is funded by both the qRD and the City
- Funding of the Regional Parks Service is by both the qRD and the City

For the purpose of this project work, a focus was on environmental – more specifically on GHG



emissions reduction objectives and policies – of the OCPs. GHG emission reduction objectives of each electoral area and the City of Powell River are similar in the sense that all jurisdictions have some form of GHG emission reduction targets and they all plan to consider the impacts of climate change in all land use decisions. These objectives vary in how specific the targets are; for example, the City of Powell River has a much more specific GHG emission reduction target compared to other areas. On the other hand, Savary Island and Electoral Area D (Texada Island) set the BC provincial emissions reduction target as their guide, rather than having a region-specific emissions reduction target. Electoral Areas B and C have very similar climate change objectives and their emissions reduction target is specific to CO<sub>2</sub> emissions from individual transportation.

Table 2. Overview of the Climate Change Objectives of Electoral Areas of qRD and the City of Powell River.

<b>Electoral Area</b>	<b>Climate Change Objectives</b>
<b>Electoral Area A</b>	<ul style="list-style-type: none"> <li>• To reduce greenhouse gas emissions by 25% by the year 2050</li> <li>• To increase ridership on regional transit</li> </ul>
<b>Savary Island</b>	<ul style="list-style-type: none"> <li>• To reduce greenhouse gas emissions through reduced fossil fuel consumption and shifts to alternative forms of energy</li> <li>• To promote the use of renewable energy and the development of renewable energy sources</li> <li>• To reduce greenhouse gas emissions by 33% by the year 2020</li> <li>• To consider the impacts of climate change in all land use decisions</li> </ul>
<b>Electoral Area B</b>	<ul style="list-style-type: none"> <li>• To reduce vehicular CO<sub>2</sub> emissions by 10% by 2021</li> <li>• To increase ridership on regional transit</li> <li>• To consider the impacts of climate change in all land use decisions</li> </ul>
<b>Electoral Area C</b>	<ul style="list-style-type: none"> <li>• To reduce vehicular CO<sub>2</sub> emissions by 10% by 2021</li> <li>• To increase ridership on regional transit</li> <li>• To focus 50% of all new housing units within the community nodes of Black Point and Lang Bay</li> <li>• To consider the impacts of climate change in all land use decisions</li> </ul>
<b>Electoral Area D</b>	<ul style="list-style-type: none"> <li>• To support climate change mitigation by reducing greenhouse gas emissions at the community level</li> <li>• To support climate change adaptation by completing high-level risk assessments (sea level rise, coastal flooding, landslide, wildfire) to guide land use and development</li> </ul>
<b>City of Powell River</b>	<ul style="list-style-type: none"> <li>• GHG emission objectives are 3.25 tonnes per capita by 2020, a 33% reduction from 2007, and 1.0 tonne per capita, an 80% reduction, by 2050. For the purposes of interim monitoring, an 18% emissions reduction target has been set for 2016, which</li> </ul>



	<p>would equal emissions of 4.0 tonnes per capita (i.e. a 0.87 tCO<sub>2</sub>e reduction from 2007 levels)</p> <p>* the targets will be updated in response to the City's recent declaration of climate emergency (February, 21, 2019). Refer to Appendix A for details.</p> <ul style="list-style-type: none"><li>• Municipal emissions reduction efforts will focus on emissions reductions in three primary sectors: road transportation, building energy use and solid waste</li><li>• Transportation emissions reductions include Mode Share targets</li><li>• The City commits to fiscally, socially and environmentally responsible land use development where regulation is within the jurisdiction of the City, and actively lobby and seek change in respect of GHG emissions that are beyond the scope of City jurisdiction</li></ul>
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Source: Official Community Plans of Electoral Areas of qRD and the City of Powell River

In summary, most OCPs state some form of reduction target in the not so distant future, some of them as early as 2020. Most OCPs reference the reduction in GHG in the transportation sector, and almost all reference responsible land use planning to reduce GHG emissions. One reference is made to the utilization of renewable energy. All these aspects needed to be reflected in the chosen pathways.

An overview of the OCPs of the sub-local governing bodies can be found in the form of summaries (with a focus on their climate change objectives and policies) in Appendix A.

### 3.3 Community Group

Climate Action Powell River Society (CAPR) is a non-profit society committed to helping the residents and businesses of Powell River to reduce their greenhouse gas (GHG) emissions and also to support the vision and goals of the Paris Agreement and the Powell River Integrated Community Sustainability Plan (ICSP). CAPR identified four distinct strategies that will facilitate emission reduction and environmental health and sustainability within qRD. The strategies are referred to as “ROAD Map,” which stands for Reduction, Offsetting, Adaptation, and Drawdown.

CAPR acknowledges that the existing Community Energy and Emissions Plan (CEEP) for the City of Powell River and the Regional District only cover emissions from municipal and regional administrative activities not emissions from the community; therefore, it intends to fill the gap by developing a community emission reduction target along with the ROAD Map. Simply referring to the BC Provincial target and Paris Agreement, CAPR set the goal to reduce the total emissions 33% by 2020 and 80% by 2050. Referring to the total community emissions from the 2010 Community Energy and Emission Inventory (CEEI), which is 121,255 t CO<sub>2</sub>e, CAPR aims to reduce emissions to 80,028 t CO<sub>2</sub>e by 2020 and 24,251 t CO<sub>2</sub>e by 2050.

More specifically, CAPR put forth an action timeline in January, 2018 to implement the “ROAD Map” until January, 2020 hoping that qRD will become carbon neutral by then.





A number of project activities are incorporated into their ROAD Map. They include the calculation of individual footprints, a Car Stop project, Ride share development, EV infrastructure expansion, and voluntary road sharing pilot project as transportation accounted for 70% of the total community emissions in 2010 (CEEI). Equally important efforts are being put into community engagement and outreach as well as building partnerships. These partnerships include the agricultural sector around food security, forestry sector around tree planting and wildfire protection, local governments around building new and sustainable transportation infrastructure and housing, private landowners around restoring wetlands on Texada Island and finally with renewable energy sector for new projects to transition from fossil fuel.

It is important that the chosen emissions reduction pathways are compatible with community input. Therefore, the different elements and project activities put forward by the community group Climate Action Powell River Society have been considered in the selection of the emission reduction pathway activities.

### 3.4 Lund water system

Currently, Lund water system, which supplies water to Lund from Thulin Lake, is owned and operated by the Lund Water Improvement District. In November, 2018, McElhanney Consulting Services was retained by qathet Regional District to review the Lund water system for potentially taking over ownership and operation. The review from McElhanney assessed the existing system (supply system, pump stations and treatment, storage and distribution), system demands & capacity, land tenure issues, and potential system improvements. At the time of delivery of this report, Lund water system was identified as one of the factors to consider but it wasn't considered suitable as a pathway for reducing GHG emissions for qRD at this point in time.



## 4 qathet Regional District's Corporate GHG Emissions Profile

### 4.1 Corporate vs Community Emissions

As part of the requirements of the B.C. Climate Action Charter, local governments have an obligation to measure and reduce both corporate and community emissions. While at first glance, these two areas—corporate and community—seem to be two sets of different activities; a more in depth look at this subject reveals that both are very much interconnected.

In 2007, the majority of B.C.'s local governments voluntarily signed the B.C. Climate Action Charter, committing to take actions and develop strategies to achieve three goals:

- Being carbon neutral in respect of their corporate operations by 2012;
- Measuring and reporting on their community GHG emissions; and
- Creating complete, compact and energy-efficient rural and urban communities.

Corporate emissions are GHG emissions from local governments' daily and annual operations—for example, to heat buildings, run vehicle fleets, and manage waste and water. Local governments' corporate operations are based on a “traditional services” model. Traditional services (as defined by the “Becoming Carbon Neutral Guidebook” in the BC Climate Action Toolkit) are services that are most commonly provided by the majority of local governments. There are a total of six traditional service sectors.

- Administration and governance
- Drinking, storm and wastewater
- Solid waste collection, transportation and diversion
- Roads and traffic operations
- Arts, recreation and cultural services
- Fire protection

Within the traditional service sectors, only emissions related to the operation and maintenance of traditional services are included in corporate emissions.

Community emissions are GHG emissions from residents, businesses and industry in the community within the jurisdictional boundaries of the local government.

Within a community, there are also public sector organizations (PSOs) that are subject to B.C.'s Carbon Neutral Government program. Under this program, all PSOs (provincial ministries and agencies, boards of education, colleges, universities, health authorities and Crown corporations) are required to become carbon neutral. For example, a hospital facility or a school in the community is neither included in corporate nor community emissions because it is subject to a separate regulation—the Carbon Neutral Government regulation. However, any emission reduction in those entities will still represent a reduction within the community and therefore lead change by example.

The B.C. Climate Action Charter enables local governments to lead by example and demonstrate leadership by taking responsibility for the corporate emissions so they can motivate community members to take climate actions as well. In addition, the Green

Communities Carbon Neutral Framework encourages local governments to achieve carbon neutrality. The Carbon Neutral Framework provides options that enable local governments to use the measurable emission reductions resulting from emission reductions in the community to offset their corporate emissions.

Corporate and community emissions have different scopes and boundaries. However, they have a strong direct correlation because corporate reduction initiatives affect community infrastructure and services, therefore resulting in reduction in community emissions as well. If a local government decides to start, for example, an organic waste diversion program, this will enable the emission reduction related to part of the waste stream originating from the community. If a local government installs electric charging stations shared by both municipal staff and residents of the community, this reduces both corporate and community emissions in the transportation sector. A recreation centre operated by a local government, which is retrofitted or powered by renewable energy, will use less energy and be less emission-intensive for the residents. These examples demonstrate how any local government undertaking a strategic approach to reductions in corporate emissions will by default also reduce the emissions for the community directly or indirectly.

## 4.2 qathet Regional District GHG Emission Profile

In 2018, the qRD's total corporate GHG emissions from traditional services was 147 tCO<sub>2</sub>e. This is a 32% decrease from the total GHG emissions of 215 tCO<sub>2</sub>e in 2017. This is a positive trend contrary to the past where the total emissions increased 22% from 2015 to 2016 and then another 9% from 2016 to 2017. The strategy incorporates a concrete suite of GHG emission reduction pathways and related actions that are suitable and effective for the Regional District to further reduce its emissions to achieve its reduction targets and meet its Climate Action Charter commitments.

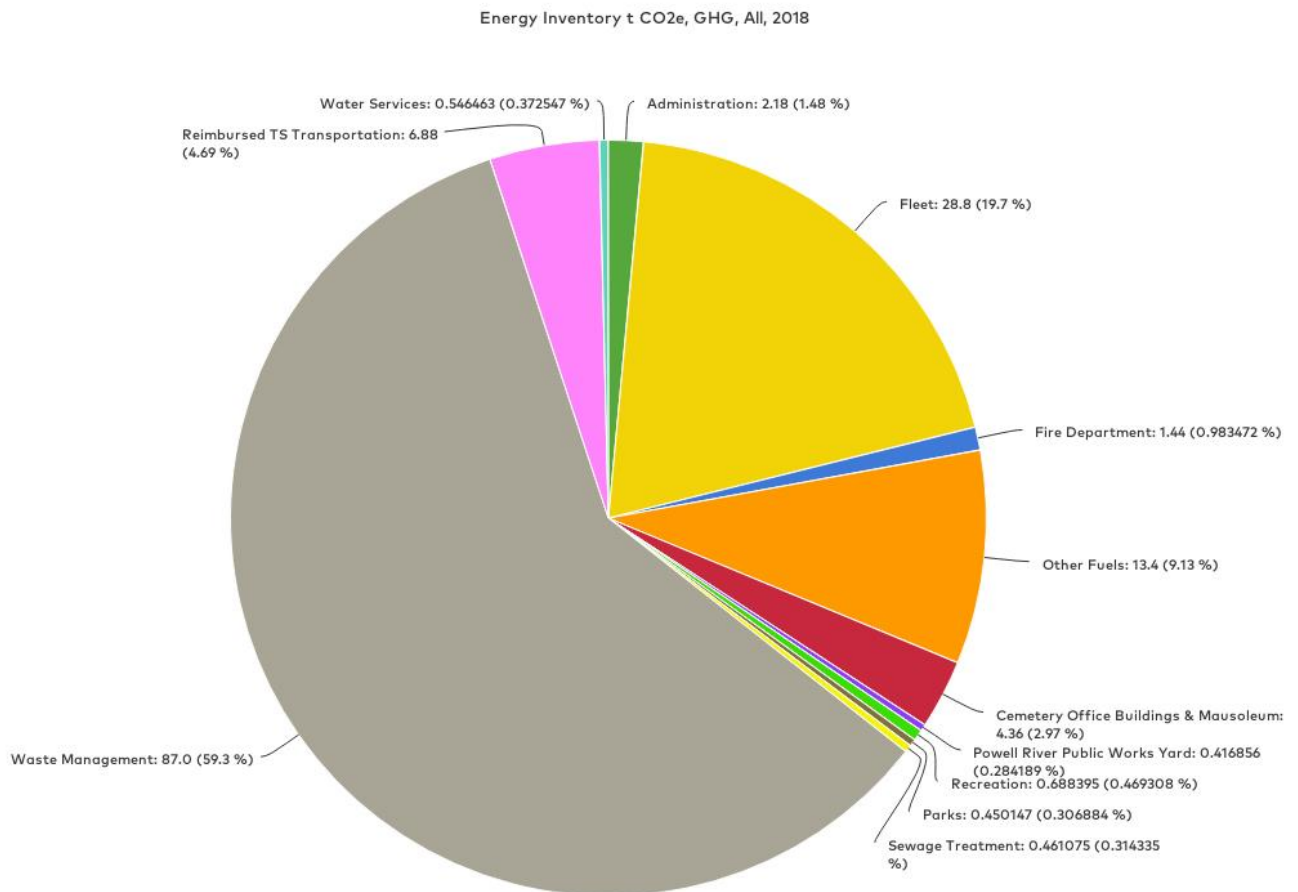
Table1. Corporate GHG emission profile in t CO<sub>2</sub>e by service area 2015 to 2018

Service Area	2015	2016	2017	2018	2017 - 2018
Waste Management	99.0	111.0	110.00	87.0	-21%
Fleet	32.0	39.1	69.50	28.8	-59%
Recreation	8.69	13.6	7.75	0.69	-91%
Reimbursed TS Transportation	6.44	5.80	6.35	6.88	8%
Cemetery Office Buildings & Mausoleum	0.268	13.8	5.92	4.36	-26%
Fire Department	7.93	2.14	5.40	1.44	-73%
Parks	2.25	5.93	4.48	0.45	-90%
Administration	3.42	3.83	4.09	2.18	-47%
Water Services	0.55	0.52	0.59	0.55	-7%
Powell River Public Works Yard	0.35	0.37	0.39	0.42	8%
Sewage Treatment	0.34	0.38	0.37	0.46	24%
<b>Total</b>	<b>161</b>	<b>197</b>	<b>215</b>	<b>147</b>	<b>-32%</b>



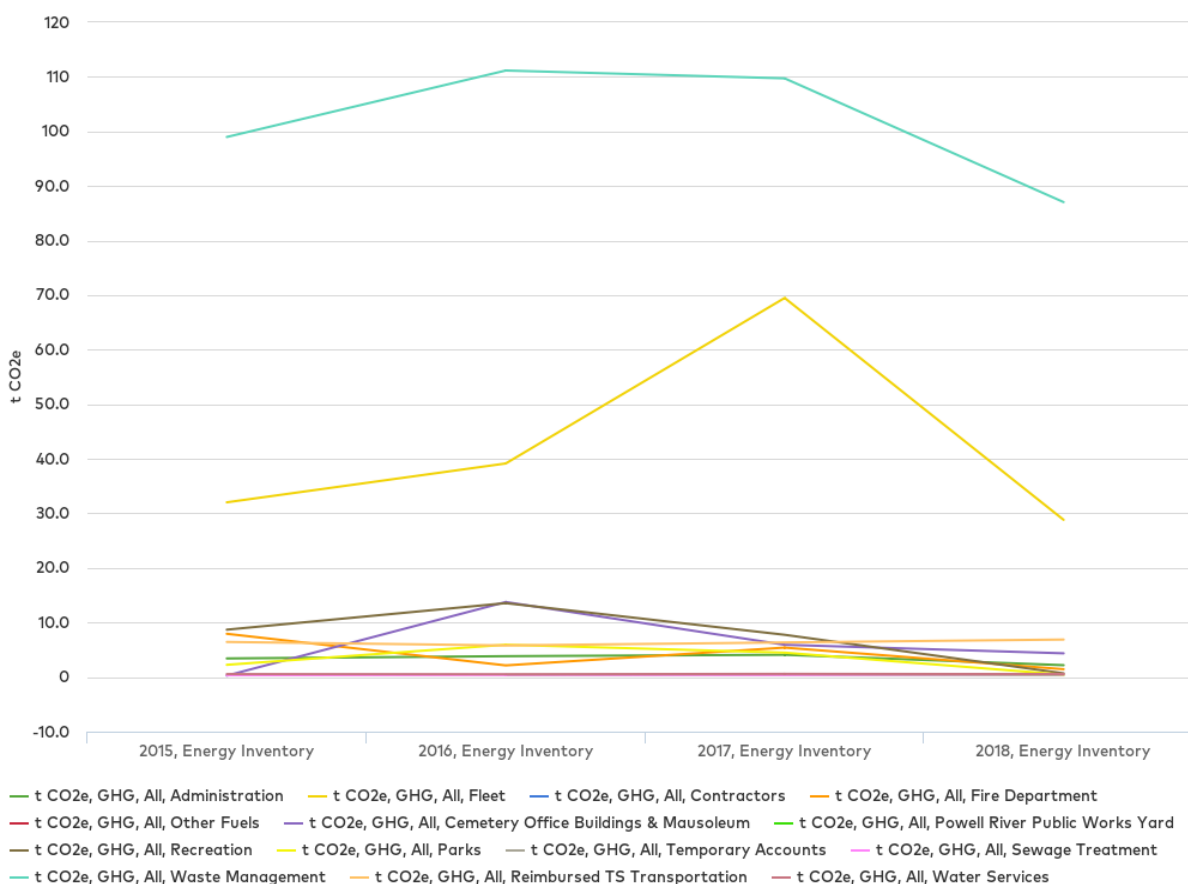
A review of the corporate GHG emission profile in 2018 and previous years clearly shows that the service area of Waste Management is the biggest contributor to the overall GHG corporate footprint. The Fleet is next, followed by Recreation with a much smaller contribution level. The top two areas – Waste Management and Fleet – make up almost 80% of the overall GHG corporate profile.

Figure 1. Corporate GHG emission profile in 2018 by service area



Looking at the top contributors – Waste Management and Fleet – this reveals that from 2015 to 2017, both categories increased to 2017 then decreased in 2018. The Fleet shows the greatest increase over the period 2015 -2017. It is worth noting that Recreation, which was the third biggest contributor to qRD total emissions from 2015 to 2017, decreased significantly in 2018. Also, there are other deviations for 2018 – Other Fuels service area increased significantly because marine passenger transportation has been removed from the TSI scope and total propane fuel use has been moved to the Other Fuels.

Figure 2. Corporate GHG emission profile by service area 2015 to 2018



Analyzing the energy use and origin for 2017 indicates that the single biggest energy use is mobile fuel use for transportation. This covers local transportation in fleet fuel use, as well as the fuel attributed to the transportation of waste to the USA. The largest segment of energy use (i.e. mobile), is also the one with the lowest renewable content. The currently low renewable content of 4-5% is not a result of a purchasing choice by the Regional District, but is a result of the BC transportation fuel requirements under the *Renewable & Low Carbon Fuel Requirements Regulation*, which mandates these levels of renewable content.

Table 2. Analyzing the energy types and renewable content for 2017

Energy Type	GJ	t CO2e, GHG	Fossil Fuel Based	Renewable Based
Direct Fuel Combustion	393	24	100.0%	0.0%
Electricity	1572	5	5.0%	95.0%
Mobile Energy Use	2530	186	95.5%	4.5%
Total / Average	4495	215	67.0%	33.0%



## 5 Summary of Review Findings

The corporate GHG profile indicates that the Regional District requires:

1. **(P1) Low GHG solution pathways for the Waste Management service area.**
2. **(P2) Low GHG solution pathways for the Fleet service area.**

Reviewing these in conjunction with the targets of the various OCPs, the Climate Action Charter goals and the Strategic Plan for 2019 to 2022 the Regional District requires:

3. **(P3) Low GHG solution pathways for transportation.**
4. **(P4) A renewable energy generation pathway to decrease the use of fossil fuel.**
5. **(P5) An offset project relating to natural assets and land use to achieve carbon neutrality (CARIP goal), as well as protecting ecosystems and watersheds.**

The approach taken in the review and analysis, drawing from existing strategic plans and considering input from the community, as well as the detailed analysis of the corporate GHG profile, ensures that the resulting strategy will be in sync with strategic plans and regional OCPs, resonate with the community and will be effective in achieving both GHG reduction targets as well as Climate Action Charter carbon neutrality.

In order to address the five requirements for the Regional District and the development of pathways and solutions, the project approach seeks to consider best practices and solutions successfully adopted by other local governments. To this end, GHG Accounting conducted a review of best practices and GHG reduction solutions pathways in Canada and internationally where applicable.





## 6 Local Climate Action Best Practice Research Review

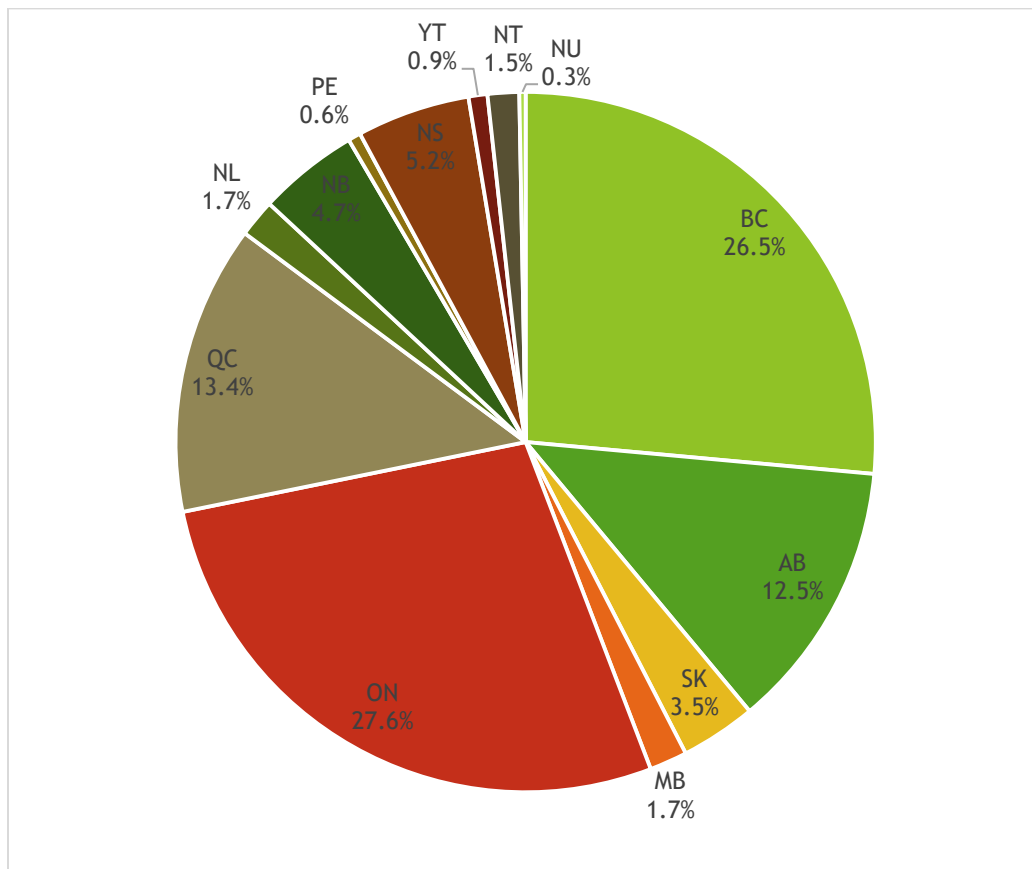
### 6.1 Background of the Research

GHG Accounting conducted a comprehensive review of best practices from successful GHG emission reduction projects across Canada and internationally where applicable. In order to minimize the risk of failure and to optimize the success rate, the Regional District chose to leverage these best practices successfully developed by other local governments as source for the solution pathways to address the five strategic solution areas.

### 6.2 Research Findings

The study was conducted in 2017 based on publicly available resources, which provide summaries or good practice examples of municipal climate actions. The public availability of the information was set as key criteria because transparency and publicity provide a face value validation of the information provided. Documentation on a total of 344 local climate actions in Canada were publicly available. BC, Ontario, Québec, and Alberta accounted for 80% of the total local climate actions in Canada – each contributing 26.5%, 27.6%, 13.4%, and 12.5%, respectively.

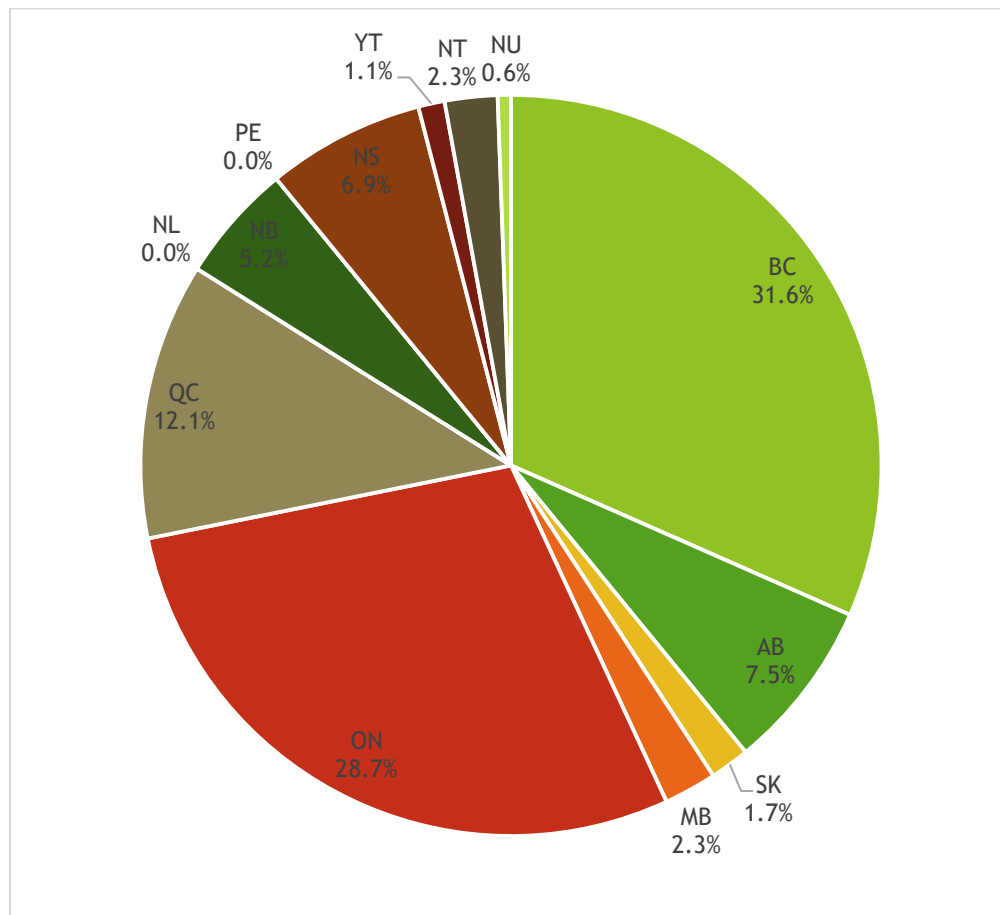
Figure 3. Municipal Climate Actions in Canada (actions highlighted on publicly available resources)





Further, the climate actions were tested upon their additionality, meaning the aspect that they are beyond business as usual and would not have otherwise happened. Only 174 climate actions were identified from 344 as additional (representing only 49.4%). The distribution of these additional climate actions by provinces and territories did not change significantly except it is worth noting that BC's portion increased while Alberta's portion decreased. One explanation for this would be that most small building retrofit projects in Alberta did not qualify for being additional because they were deemed to be part of regular building maintenance.

Figure 4. Additional Municipal Climate Actions in Canada

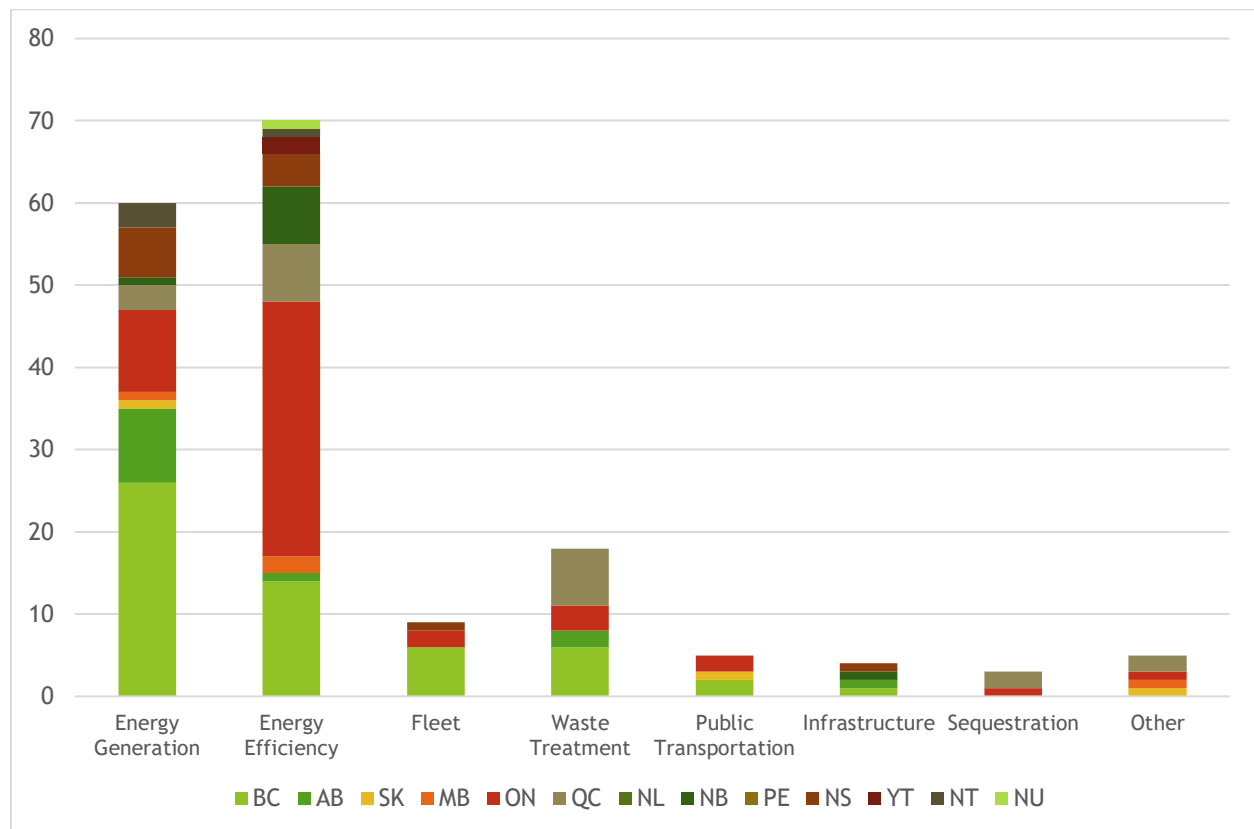


The additional climate actions were then categorized into types to match them to service area requirements. It was found that local governments across Canada focus heavily on energy generation and energy efficiency projects. Almost half of energy generation projects took place in BC while 44% of energy efficiency projects were in Ontario. Energy generation projects included renewable energy (biomass, biogas, geothermal, solar PV/thermal, hydro, wind) and district energy systems. Energy efficiency projects were mostly comprehensive energy retrofit projects that included lighting and window upgrades, installing digital control systems and high efficiency heating and cooling systems, and heat recovery.



BC and Ontario had the most diversified portfolios of climate actions. In other words, they had climate actions in almost all sectors. Ontario stands out in implementing large scale energy efficiency projects in public and/or municipal buildings while Québec has many innovative waste treatment projects such as creating eco-centres (resource recovery) and composting facilities to improve landfill diversion rate.

Figure 5. Sectors of Municipal Climate Actions in Provinces and Territories



From the analysis of municipal climate actions, two important points can be derived: 1) majority of climate actions are taken in energy generation and energy efficiency sectors, and 2) the policies in BC and Ontario have been most effective in incentivizing local governments to proactively implement climate actions. The following section pairs the best practise examples with the five requirement areas for the Reginal District.

### 6.3 Best Practice Examples- Waste Management Sector Requirement P1

Almost half of the total GHG emissions in the Reginal District's inventory originate from the Waste Management sector. In order to reduce emissions from waste management effectively, climate actions that fit the qRD's context should be implemented. Exploring best practice examples from other jurisdictions will help identify the appropriate low GHG emissions pathway for the qRD. A total of 14 best practice examples could be matched to the Waste Management Sector requirement.



#### *6.3.1.1 District of Mission, BC*

Food waste had been collected separately in Mission for more than ten years. Residents had been encouraged to use at-home composters, or to place food scraps in with yard waste. The municipality found, however, that this approach was largely underutilized, and waste audits showed that approximately 50% of curbside garbage could be composted.

To find out what was preventing residents from separating food waste from other garbage, and whether the provision of designated bins would increase participation, a ten-week pilot project involving 80 households was conducted between June and August 2010. The project involved two mail-out surveys, collection of baseline data, distribution of green bins and kitchen catchers with educational material, analysis of all curbside compost materials, and tracking of data. Over the course of this pilot project, 62 of the 80 households used the organic bins at least once.

Building on the success of the pilot project, Mission adopted a community-wide curbside organics program, and the municipality began distributing the green bins (dubbed “Rot Pots”) to 9,100 households in June 2011. The organics program includes all food wastes, contaminated paper, and yard waste. Mission chose a 46- litre Norseman-brand bin for its strength and ease of handling. The collected organics are sent to Transform Compost Systems (TCS) at Mission’s landfill for composting, rather than the private processor in Abbotsford that they had previously used. The finished compost is marketed by TCS. At TCS, the collected organics are heated to 800 degrees Celsius to destroy bacteria and viruses.

In the first year of implementing the Rot Pots, based on informal curbside drive-by audits, the average participation rate is 35%. Organics collection rose significantly once the Rot Pots were distributed. Mission is currently diverting about 1,200 tonnes of food waste per year and, within five years, hopes to increase that to 2,000 tonnes. Average annual GHG reductions are estimated to be 1,300 tonnes per year for the next ten years. Additional emission reductions were achieved by sending the organic material to the local landfill, rather than to an independent processor in Abbotsford.

#### *6.3.1.2 City of Toronto, ON*

In 2011, the City of Toronto requested funding to develop one of two new Source Separated Organics (SSO) processing facilities, in accordance with the recommendations of their 2005 SSO Planning Study. This facility, to be constructed at the Disco Road Waste Management Facility, will help meet growing demands on the city’s Green Bin program as it expands to multi-family dwellings in support of the city’s 70% waste diversion target.

The new Disco Road Organics Processing Facility (DROPF) will be designed to handle 90,000 tonnes of SSO waste annually. The treatment process will consist of the following: receiving and storage; pre-processing; anaerobic digestion including thickening and dewatering systems; and ancillary systems including a residue management system and an odour treatment system.

The development of the DROPF, in combination with the expansion of the Dufferin organics processing facility, will increase the city’s overall SSO processing capacity to approximately 145,000 tonnes per year, to achieve an overall increase in the residential diversion rate from



44 to 51%. The facility will produce digester solids, a feedstock for the production of high-quality compost, and will generate approximately 11.1 million cubic meters of biogas annually. This biogas will be refined into approximately 5.3 million cubic meters of biomethane, a portion of which will fuel the City's collection fleet, while the excess will be used to offset the consumption of natural gas for heating and hot water at city facilities. The city will keep the ownership of the biomethane generated by the facility and will retain title to any offsets from these emission reductions. Furthermore, processing the SSO within the city boundaries will result in a 60 to 70% reduction in haulage costs and a 50% reduction in fuel consumption.

#### *6.3.1.3 MRC of Rocher-Percé, QC*

In 2008, based on the framework of its waste management plan 2005, the MRC of Rocher-Percé will develop a composting site with a capacity of 4,600 tons as well as an eco-centre for metal products, used tires, demolition material and hazardous household waste. It will also provide two secondary eco-centres at the two far ends of the MRC. The composting site will be able to receive all the MRC's household organic waste that is currently being sent to dumpsites as well as organic waste produced in the industrial, commercial and institutional sector and in fish plants. The facility will include an open air windrow site and indoor treatment and ripening of leachate to help eliminate odour problems associated with fish waste. This project will help the MRC of Rocher-Percé increase its total waste diversion rate from 16% to 60% and reduce GHG emissions by eliminating organic waste from dumpsites and by optimizing its collection and transportation methods.

#### *6.3.1.4 Ville de Sherbrooke, QC*

In 2014, the Valoris Intermunicipal Board built a sorting centre for waste going to landfill to achieve a diversion rate of over 60% for the municipalities of the Haut-Saint-François RCM and Sherbrooke. This centre will process annually 70,000 mt to 125,000 mt of residential, industrial, commercial and institutional waste and will extract quality organic material enabling the production of compost or digestate for agricultural use. The centre will process paper, cardboard, plastics and other recyclable materials that are collected for landfill. Ultimately, 70% of waste material collected in garbage bags will be diverted. Valoris is seeking LEED certification for the new building and a reduction in annual energy consumption of about 37% (3,690 GJ). Construction will include recovery of rainwater and use of local and recycled materials. The project will lead to the creation of 25 new jobs, not to mention the economic benefits accruing to local contractors performing the work.

### **6.4 Best Practice Examples - Fleet Sector Requirement P2**

The Fleet is a very common large energy user for every local governments. In the case of the qRD it represents the second biggest GHG emission source. A total of 8 best practice examples of municipal climate actions in the fleet sector could be matched to the fleet pathway requirement of the Region District.



#### *6.4.1.1 District of Saanich, BC*

In 2007, Saanich signed up to participate in the E3 Fleet Program<sup>1</sup>, Canada's first green rating system for fleets, managed by the Fraser Basin Council. Saanich completed an Action Plan based on the E3 Fleet review which provided a clear set of performance indicators used to achieve fuel consumption reductions. Saanich made commitments to increase fuel efficiency, reduce harmful emissions, and incorporate new technologies and fuel sources into operations. Much of the fleet changes focused on vehicle right-sizing, which involves utilizing the most fuel efficient vehicles to complete tasks. Steps were also taken to target fleet conversions from gas to high efficiency diesel. Fleet management incorporated full life-cycle costs of new vehicle purchases and the Carbon Fund was used to help pay for new hybrid and electric vehicles (EVs).

In the latest 2015 Annual Report, Saanich highlights that there are 9 EVs in its municipal fleet. In the Saanich pool fleet, there are 6 EVs for its municipal operations. The police department also has an EV for court liaison purposes, making it the first police department in Canada to incorporate an EV into its fleet. The remaining 2 EVs are being used by the Parks department. Saanich has been continuously focusing on purchasing additional EVs as well as utilizing new efficient waste fleet vehicles, municipal pooled fleet vehicles and a fuel data management and tracking system. It is hoped these initiatives will propel Saanich towards reducing their corporate emissions by 50% by 2020.

Saanich's fleet management strategies achieved a 14% decrease in fleet GHG emissions from 2007 until 2014. This amounts to a reduction of emissions by 400 tonnes annually and a cumulative reduction of 3,627 tonnes. Saanich consumes 90,000 fewer litres of fuel per year and has saved a cumulative 1,028,000 litres of fuel. Reduced fuel consumption is saving the municipality \$108,000 annually and a total of \$1,230,000 since the project began. The use of an EV reduces energy costs for that vehicle by 90%. The EVs in use have an anticipated life cycle savings of 98% less GHG emissions when compared to a gas vehicle of the same class.

Saanich also set a target to increase the number of EVs in community to 5,000 by 2020. In 2015, there were 149 EVs in the community. With just over 70,000 personal vehicles in Saanich, having charging stations could help reduce more than 10,000 tonnes of GHG in the community. Saanich has continued to install more EV charging stations. There are about 100 Level 2 stations that are being installed in the Capital Region. In 2015, the District of Saanich, Uptown, the Province of BC, and the Government of Canada partnered to install the Capital Region's first EV direct current (DC) fast-charging station. This station has been one of the busiest in BC.

#### *6.4.1.2 City of Nanaimo and Regional District of Nanaimo, BC*

In 2012, under separate projects, both the City of Nanaimo and the Regional District of

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<sup>1</sup> E3 Fleet Program was founded and managed by the not-for-profit Fraser Basin Council from 2006 until 2016. Management responsibility for E3 Fleet was recently transferred to the not-for-profit Richmond Sustainability Initiatives (RSI), which managed the Fleet Challenge program and a range of sustainable fleet transportation programs.





Nanaimo purchased EVs for their fleet operations, and have installed charging stations for use by municipal fleet vehicles and residents alike.

The Regional District investigated several electric models and chose the Nissan LEAF, which fit the purpose of being used for a few short trips every day for the District's bus drivers to use to change shifts. In addition, the District installed a charging station, at a cost of about \$1,200, which was also paid for out of the reserve fund. Total implementation costs ran to approximately \$40,000, and the District expects that GHG emissions will be reduced by about 4 tonnes annually. Given that the District's transit crew usually logs about 20,000 km per year, about 2,000 litres of fuel will be saved.

Between 2011 and 2012, The City of Nanaimo purchased 3 Nissan LEAFs to replace 3 vehicles from its fleet. Two are used by Development Services personnel, while the third is used by Bylaw Services staff, and all municipal drivers of the EVs underwent in-house training. Nissan LEAF was chosen because it fit the needs of the fleet in terms of size and driving range. Four public charging stations were installed at three locations for use by the City's EVs, as well as by residents who own EVs. The City estimates annual GHG reductions to be about 80% less, compared to traditional gas-powered vehicles. The three EVs are expected to save the City about \$25,000 in fuel, maintenance and GHG emission reductions over their 10-year lifecycle.

#### **6.4.1.3 City of Mississauga, ON**

As part of the Clean Air Strategy 2005, the City of Mississauga undertook a Fleet Emissions Reduction Study in 2006 to identify ways to make the city's fleet cleaner and greener. A major component of the study examined how the city could right size its municipal fleet by downsizing engine size, using biodiesel and replacing some vehicles with more efficient or hybrid models. The city's fleet, excluding transit buses, includes vehicles for corporate, fire and emergency, parking enforcement and small transit uses.

By 2010, 93 vehicles have been right sized: 54 from the corporate fleet, 25 smaller transit vehicles, two fire department vehicles and 12 parking enforcement vehicles. As part of the City's regular vehicle replacement program, the majority of the right-sizing initiatives involved purchasing hybrid gasoline-electric vehicles.

The city also offered EcoDriver workshops to its employees. Delivered by the Community Environmental Alliance in conjunction with Smart Commute Mississauga, a local transportation management association, the EcoDriver program educates motorists about energy-efficient driving techniques.

As a result of the right-sizing initiatives, GHG emissions will be cut by approximately 548 tonnes. Once the full five-year replacement program has been completed, the city will have saved \$227,000 in capital costs and \$446,000 in cumulative operating savings.

### **6.5 Best Practice Examples - Transportation Requirement P3**

Road and traffic operations fall under traditional services that local governments provide for the community. However, beyond the sheer running of daily operations, local governments have the opportunity to provide the right kind of incentives, physical infrastructure and regulatory framework to enable new and innovative low GHG emission transportation



solutions. Any such activities by local governments in BC will be considered additional because it is outside of the traditional service inventory.

#### *6.5.1.1 Salt Spring Island, BC*

In January 2008, the Salt Spring Island Transit System commenced bus service on Salt Spring Island. The system is a partnership among BC Transit, the Capital Regional District (CRD) and the local operating company, Ganges Faerie Minishuttle Ltd. The service began with two 20-passenger mini-buses with routes that include regular visits to Vesuvius, Fernwood, Fulford Harbour and Long Harbour. These routes all lead to Ganges, thereby linking residents to Island ferry terminals and community facilities. While buses operate on fixed routes and schedules, they will detour to pick up and drop off passengers wherever possible. While there have been several attempts over the years to establish a public bus service on Salt Spring Island, all of these attempts eventually failed. With the support of BC Transit and CRD, the Salt Spring Island Transit System is expected to be an ongoing and permanent service.

#### *6.5.1.2 Island of Sylt, Germany*

As illustrated above, in recent years, hybrid electric buses have become the predominant technology for less carbon intensive transportation. However, the introduction of hybrid electric buses in certain jurisdictions (such as Saskatoon and Ottawa) did not meet expectations around fuel efficiency. As a result, we broadened the scope of our review to include innovative transportation solutions in international jurisdictions such as Germany. In order to offer a zero-emission transportation solution that is economical and suitable for a rural small community, the Island of Sylt has introduced an autonomous electric mini bus services. In its first phase, the service runs on a fixed route, but the scheduling is by demand. Future services are envisaged to be completely on demand with flexibility in routing and schedules to address local transportation needs, thereby making local car trips obsolete. The introduction of autonomous electric mini bus services offers zero carbon transportation for citizens at low cost, in comparison to the high capital cost of purchasing an individual electric car. In addition, the mini bus has a much higher utilization rate than an electric car. This aspect more than compensates for the impact of any emissions intensive material used in the manufacturing of the vehicle and the battery.

### **6.6 Best Practice Examples - Renewable Energy Generation Requirement P 4**

In order to make significant GHG emission reductions and ultimately achieve zero carbon status, it is crucial that qRD starts making a transition to renewable energy. There are limits to reducing emissions and improving energy efficiency in the traditional fossil fuel economy. Shifting away from traditional energy sources will not only allow qRD to break through such limits, but it will also benefit from the synergies of reducing emissions and generating clean energy. Additional positive externalities of local renewable energy generation include energy resiliency and public health benefits. A total of 9 best practice examples of municipal climate actions in the renewable energy generation sector can be matched to the Renewable Energy Generation pathway.



#### *6.6.1.1 District of Houston, BC*

The District of Houston is a small northern community with big environmental initiatives; in particular, the promotion of alternative energy sources such as geothermal, solar and biomass energy. Initiatives undertaken by Houston include geothermal heating for the pool, arena and curling facilities, solar powered park lighting, promoting the best use of biomass, and using heat recovery from sewer treatment to heat the public works building.

In 2007, Houston received a \$225,000 grant and a \$275,000 loan from Northern Development Initiative Trust through the Economic Diversification Infrastructure program for a \$2,400,000 project that would install a geothermal power generator for municipal buildings. In 2012, the Claude Parish Memorial Arena ice plant was equipped with a geothermal heat pump system, which allows the arena to operate year-round and maintain the temperature of the aquatic centre's pools. The geothermal heat pump system reduces 124.6 tonnes of GHG emissions annually from the arena.

#### *6.6.1.2 Township of Langley, BC*

In 2010, the Township of Langley installed a geothermal system at the Aldergrove water treatment plant. The system uses energy from groundwater to heat and cool the 750 m<sup>2</sup> building. Aldergrove aquifer made a perfect heating and cooling source because it remains relatively constant at about 9.5 to 11.5 degrees Celsius year round.

This geothermal project cost \$136,000 and about \$91,000 was spent on construction. The balance went toward engineering design and major equipment. The township provided \$70,000 of the project cost and the remaining \$66,000 came from a Building Canada Fund grant. The cost of the project was relatively low given that the water treatment plant already had infrastructure for pumping groundwater.

Based on the plant's energy use between 2005 and 2007, the Township of Langley estimates it will avoid using about 1,300 GJ of natural gas each year. Annually, it will save more than \$8,500 in energy costs and will reduce GHG emissions by about 70 tonnes.

#### *6.6.1.3 Town of Gibsons, BC*

In 2010, the Town of Gibsons established a geoexchange district energy utility system to heat and cool a new housing development. Gibsons' geoexchange system uses a series of underground piping to capture heat from the earth. Pipes filled with a water and ethanol solution are connected from a pumphouse to each house. The energy is then extracted through a heat pump installed in each residence.

The geoexchange district energy utility system is the first municipally-owned district energy utility of its kind in North America. The municipality charges homes for the energy provided. Municipal staff, contractors or consultants inspect the connections, issue bills and collect heat loss calculations. Each homeowner pays a \$150 fee to connect to the system. The cost of the heat pump is estimated to be about 30% more than a conventional heating and cooling system; however, the savings on heating and cooling offset that price and there are a number of grants available to homeowners to pay for the heat pumps.

The first phase of the project was completed at the end of 2010 and it provides heating and



cooling to 27 residential lots in the Parkland development area of Gibsons. The total project cost was \$1.4 million and was financed through a combination of municipal capital, gas tax monies allocated by the province, general taxation, and two grants totaling \$569,000 from the province's Innovative Clean Energy Fund and the Island Coastal Economic Trust.

GHG emissions reductions due to the geoexchange system are about 335 tonnes annually. When the housing development is completed serving 700 buildings, the system is estimated to reduce about 1,768 tonnes of GHG emissions annually.

#### *6.6.1.4 Comox Valley Regional District, BC*

In early 2013, Comox Valley Regional District (CVRD) installed four solar PV systems at the Oyster River and Fanny Bay fire halls, the Royston south sewer project office, and the Little River water services building. All four installations were connected to the electricity grid via BC Hydro's net metering program. Under the program, the CVRD receives a credit on their account when the photovoltaic systems generate more electricity than is used by the building. Since the installation, the four systems have generated approximately 35,000 kWh of electricity. The electricity savings are in the order of about \$2,000 per year. The data have shown that the costs of installing the demonstration solar PV systems are approximately the same as paying for electricity – roughly 11-12 cents per kW installed.

The projects have generated increased interest in the community, and residents are more confident about the return on their investment if they wish to install similar systems. The demonstration projects also led to a community works funding project to set up a PV demonstration system on Hornby Island. One objective is to offer a bulk-buy opportunity for residents.

#### *6.6.1.5 City of Kimberley, BC*

In 2015, the city of Kimberley completed building SunMine, a 1.05 MW solar power plant constructed on a former brownfield mine site. SunMine is BC's largest solar project, and the first grid-connected, utility-scale solar facility developed, owned, and operated by a Canadian municipality.

In 2008, the City of Kimberley and Teck Resources were approached by EcoSmart, who had analyzed weather data from airports across Canada and recognized the area's solar potential. In 2011, \$1M in funding through the Province of BC Innovative Clean Energy Fund and a \$2M donation from Teck were secured for the project. A referendum to borrow \$2M was conducted, with 76% of voters in favour. 18 agreements with 8 different organizations were negotiated over several years. In 2013, a Request For Qualifications (RFQ) was issued and the prime contractor was selected. In 2014, council decided to proceed with the project, which was completed in 2015.

SunMine has been commercially operating since June 22nd, 2015 and has been generating over 8 MWh per day. Including the testing and commissioning process, SunMine has produced 262,214 kWh to date (as of July 10th, 2015). According to SunMine's system performance monitoring software, energy produced by SunMine so far in 2015 has resulted in avoiding the creation of 350,056 lbs of CO<sub>2</sub>. With the potential to expand to up to 200MW on the current site, SunMine could eventually provide electricity for the entire East Kootenays.



#### *6.6.1.6 City of Saskatoon, SK*

In 2010, the City of Saskatoon installed solar panels at the Lawson Civic Centre (LCC) and at the Harry Bailey Aquatic Centre (HBAC). To date, these are the largest municipally owned installations in Saskatchewan, and include 90 solar panels at the LCC and 72 solar panels at the HBAC. The panels supply approximately 20-25% of the energy needed to heat the pools. South-facing solar collectors were mounted on each building's roof, and were angled to maximize solar collection throughout the year. The Sun's rays produce energy that is transferred to a non-toxic glycol solution, which is circulated within the panels, then through a heat exchanger, finally transferring the heat to water in the pool. The panels have an expected lifecycle of 25 years.

Total project costs for both buildings came to \$453,473—comprising equipment, including the panels themselves; consultants; labour; design; and a communications budget—of which \$273,902 was grant money from the federal and provincial governments. Together, the two projects are estimated to save the city approximately \$17,700 each year in natural gas costs, for a payback of 10.1 years. Annual GHG emission reductions are 120 tonnes.

#### *6.6.1.7 Village of Granisle, BC*

The Village of Granisle uses a biomass heating system to heat its fire hall. The system consumes about one half of a 53ft truck load per year of chips sourced from a saw mill in Burns Lake. The heating system has saved the village \$3,500 and reduced GHGs by 15 tonnes annually. Based on this success, Granisle is looking to expand the biomass heating system to include a number of other municipal buildings. The Village is also investigating the potential to partner with the local school district.

#### *6.6.1.8 City of Yellowknife, NT*

In 2008, the city of Yellowknife installed a wood pellet (biomass) boiler to heat the Ruth Inch Memorial Pool, Yellowknife Community Arena, and Curling Rink. The three buildings were already tied to a district heating system, powered by an oil boiler. The city chose Arctic Green Energy (AGE), a biomass supplier in Yellowknife, to connect and install the wood pellet boiler. Under the contract terms, AGE would provide a multi-year supply of wood pellets, maintain the system for one year, and train a city employee to maintain and operate the system after that. The new boiler was designed to provide 90% of the heating load of the three facilities, and the city retained the existing oil boiler for back up heating on only the coldest days of the year.

Total project cost was \$634,500 but the annual savings are about \$200,000, which gives the project a simple payback of just over 3 years. Oil consumption has dropped from about 270,000 L of oil per year in 2007, to an average of about 20,000 L. Annual GHG emission reductions are in the order of 810 tonnes.

### **6.7 Best Practice Examples - Sequestration Requirement P 5**

In order to achieve carbon neutrality in accordance with the goals of the Climate Action Charter, it is necessary to either purchase or generate qualified offsets projects. In accordance





with the OCP frameworks and community group input, sequestration projects are the most suitable project activity to undertake for the qRD. A total of 7 best practice examples of municipal climate actions in the sequestration sector can be matched to the offset project pathway.

#### *6.7.1.1 District of West Vancouver, BC*

In the District of West Vancouver, Whyte Lake Park provides significant community benefits, particularly as a hiking destination. However, according to the 2004 District of West Vancouver's Official Community Plan (OCP), this park area was zoned as residential, which was subject to future neighbourhood development. In order to ensure protection of all existing and future parks, the District of West Vancouver developed the 2012 Parks Master Plan. This Plan contained recommendations concerning 'Parkland Protection and Acquisition' that focused on protecting park lands with park dedication bylaws. Then, on July 7, 2014, the District of West Vancouver adopted *Park Dedication Bylaw No. 4794* to dedicate certain municipally owned lands adjacent to and including Whyte Lake and Whyte Lake Trail as park. On November 20, 2014, Whyte Lake Park was visited by Registered Professional Forester Rainer Muentert, RPF 3904 and a Greenhouse Gas Accountant, Svend Andersen to: 1) review the forest inventory, 2) certify that the lands in the park meet the BC Forest Lands definition, and 3) observe any evidence for forest land management activities. It was concluded that Whyte Lake Park's size is greater than the minimum size of 1 ha and is densely forested (except for the lake and its surroundings). 40% of the trees are Douglas Firs, 40% are Western Hemlock and the remaining 20% are mostly Western Red Cedar. The forest inventory label is approximately: Fdc 4 Hw 4 Cw2 -641-7. Volume per ha fluctuates between 350 and 500 m<sup>3</sup>/ha. The dominant plant is Sword Fern.

Quantification of avoided forest conversion was conducted based on the OCP and GIS analysis. For conservativeness reasons, an estimate of 50% (62 of the 124 ha) of the overall Whyte Lake Park area might be assumed for the overall degree of avoided forest conversion. Based on these studies, the Whyte Lake Park met all the requirements outlined to be approved as Green Communities Committee (GCC) Avoided Forest Conservation Project (AFCP). Local governments undertaking an AFCP are required to attest to having prepared a Forest Management Plan for the lands that are part of the AFCP. This Forest Management Plan describes how local governments will maintain the project lands to ensure the carbon benefit is retained and not released back into the atmosphere. The District of West Vancouver presented its Forest Management Plan for Whyte Lake Park in early 2015.

#### *6.7.1.2 Township of Spallumcheen, BC*

The Township of Spallumcheen leased a land for a symbolic \$1 from the City of Armstrong, which owned the land, for a phytoremediation project. The project land consists of elevated arid land that forms an extension of the embankment of an open municipal effluent lagoon. Prior to any activities, the land was unproductive and unused mainly due to the fact that it did not have sufficient natural irrigation for any substantial plant growth and that it was located on an enclosed land of the municipal effluent lagoon.

This phytoremediation project was operated by Passive Remediation Systems (PRSI) on





behalf of the Township of Spallumcheen. The project activity involved selecting, nursing and planting suitable hybrid poplar tree species to absorb the specific municipal effluent at the project site, installing a trickle irrigation system, operating the irrigation system during the growing season, regular tending of the grounds, and monitoring pH value and regular soil testing.

GHG Accounting Services kept the log records of all project activities on the land since the project started and it also conducted annual site visits. Based on a third party verification by Rainer Muentert, a BC Registered Professional Forester, as well as analysis of literature for growth projection and carbon conversion methodologies, GHG Accounting Services quantified that a carbon sequestration of 240 tCO<sub>2</sub>e in the time period between 2012 and 2022. This project was submitted as GCC Option 2 project.

#### *6.7.1.3 City of Surrey, BC*

The City of Surrey submitted two GCC Option 1 AFCPs starting on January 1, 2014. Both projects are on forested properties acquired by the City of Surrey for conservation as part of their parks program.

The first project, Surrey Aggregate Properties Avoided Forest Carbon Project, is on the aggregate properties that are comprised of 26 parcels scattered across the City of Surrey land base (50.44 ha total) and were designated as park by the City on various dates between September 2007 and early 2014. The second project, Surrey 18868 40 Ave Property Avoided Forest Carbon Project, is on one parcel (18.9 ha) that was purchased for a purpose of a public park authorized by the City Council in 2013. Both properties have been conserved as forest and thereby has avoided the greenhouse gas emissions related to forest clearing for conversion to rural real estate, agriculture, or other uses, as well as sequestering forest carbon annually in the conserved forest ecosystems.

#### *6.7.1.4 City of Penticton, BC*

The North Block of the City of Penticton is a heavily forested area, which has long been designated for residential development by the City. In the North East Sector Plan, which is a residential development plan, the North Block was identified as having the potential for 725 units of residential development. The largest property in the North Block is a 300-acre City owned property, roughly 1/3 of which the Plan identifies as for residential development.

Historically, the area has been used for grazing and ranching, but more recently it has become a destination for outdoor recreational uses including hiking and mountain biking. The cycling use has been formalized through an agreement between the City of Penticton and the Penticton and Area Cycling Association (PACA) for PACA to use the area for the development of mountain bike terrain park.

In order to conserve the North Block, the City redesignated the portions of the 1400 Riddle Road from residential to park and submitted the project under GCC AFCP. Initial calculations that the City conducted showed that the City could use over 16,000 tCO<sub>2</sub>e offsets from the project over its 20-year lifespan. The City plans to use the offsets generated from the project to meet its Climate Action commitments. Also, removing the subject lands from the North East Sector will also have some positive benefits to the developers of the Spiller and Reservoir



Blocks of the Plan. Originally, with the designation of the North Block for residential development, the water reservoir, sewer and storm water infrastructure in the Spiller and Reservoir areas needed to be oversized to accommodate the future growth of the North Block lands. This has been a determining factor in the area not proceeding sooner. Without the North Block area being designated for those purposes, the infrastructure will be easier to design, construct and pay for.

## 7 Corporate Greenhouse Gas Reduction Strategy Development

To develop this Strategy, pathway options were considered in relation to the two biggest emission sources in the qRD emission profile (Waste Management and Fleet). Best practises were used to approach overall GHG emission reduction through energy generation and a workshop was conducted on the 5<sup>th</sup> of June 2017 with all internal corporate stakeholders to evaluate which best practises examples would best fit the requirements of the qRD.

### 7.1 Pathways Review

#### 7.1.1 Waste Management

##### Project ideas:

- Bio-remediation
- Bio-mass
- Combine compost facility with the City's wastewater treatment plant
- Resource Recovery Centre (Already in planning and early development stage)

##### Short-term Project: – Bio-remediation

Short-term actions	<ul style="list-style-type: none"> <li>• Contact the City of Armstrong for information</li> <li>• Contact the Ministry of Agriculture</li> <li>• Seek board/public support</li> </ul>
Project Lead	Mike Wall
Financing	<ul style="list-style-type: none"> <li>• Community Works</li> <li>• Taxation</li> <li>• Federal/provincial/FCM grant</li> <li>• Partnership</li> </ul>
Barriers	<ul style="list-style-type: none"> <li>• Soil conditions</li> <li>• Land acquisition</li> <li>• Proximity to plant</li> <li>• End use for trees</li> <li>• Public acceptance</li> <li>• Board buy in</li> <li>• Initial &amp; operation cost</li> </ul>

##### Mid-term Project: – Biomass micro-grid

Project Lead	Mike Wall
Financing	<ul style="list-style-type: none"> <li>• Community Works</li> <li>• Federal/provincial/FCM grant</li> <li>• Private sector partners</li> </ul>



	<ul style="list-style-type: none"> <li>• City of Powell River</li> </ul>
Barriers	<ul style="list-style-type: none"> <li>• Volume of wood waste</li> <li>• Distance to deliver waste</li> <li>• Competition with private sector</li> <li>• Operating cost</li> <li>• Footprint for the heating area</li> <li>• Location of dense housing/commercial</li> </ul>

Long term Project: – Combine compost facility with the City of Powell River’s new sewage treatment plant

Project Lead	Mike Wall
Financing	<ul style="list-style-type: none"> <li>• Community Works</li> <li>• Grants</li> <li>• Taxation</li> </ul>
Barriers	<ul style="list-style-type: none"> <li>• System re-design</li> <li>• Low volume</li> <li>• City buy-in</li> <li>• Initial and operation cost</li> </ul>

### 7.1.2 Fleet

Project ideas:

- Electric Vehicle/Hybrid
- Electric Bike
- Car share – community

**Other notes:** paying more per km when people use renewable energy

**Goal:** To reduce fleet energy emissions from 19.7% in 2018

Short-term Project: EVs/hybrid for shared managerial staff use

Project Lead	Asset Management and Operations
Barriers	<ul style="list-style-type: none"> <li>• No local servicer to maintain</li> <li>• Range – no out of town travel</li> </ul>

Mid-term Project: Facility/utility campgrounds operators supplied with electric assist bikes

Project Lead	Operations
Barriers	<ul style="list-style-type: none"> <li>• Limits of weather</li> <li>• Operator’s ability to use</li> </ul>

Long term Project: EVs and alternative energy vehicles

Long term actions	<ul style="list-style-type: none"> <li>• Move towards EV vehicle and equipment fleet</li> <li>• Move towards alternative energy capture at maintenance facility storage bays for charging purposes</li> <li>• Installation of charging station in garage/parking underground facility at main office for EV</li> <li>• Consider converting existing vehicles to EV.</li> </ul>
Project Lead	Operational Services & Asset Management
Barriers	<ul style="list-style-type: none"> <li>• Cost vs. “green” benefit – measurable/justifiable</li> <li>• Political climate</li> </ul>

### 7.1.3 Energy Generation

Project ideas:

- Biomass plant plus micro grid (including Resource Centre)
- Geothermal (i.e. Qualicum Beach Fire Hall example mentioned)
- Solar PVs on roofs or at open spaces (qRD office building (owned by qRD) or maintenance building)
- Solar thermal (showers)
- Heat recovery at hospital off wastewater recovery centre

Short-term Projects:

- Small biomass plant at RRC
- Purchase or create offsets
- Solar panels on facilities that are suitable (e.g. RRC)

Mid-term Project: More solar generation at other facilities

Long term Project:

- Large biomass plant for use at the hospital
- Heat recovery at hospital

### 7.1.4 Sequestration

Project ideas:

- Municipal Natural Assets Initiative
- Sustainable Forest Practice
- Ecosystem Restoration (bogs – expensive; fens – fairly inexpensive)
- Revegetating large swaths of coastline (Green shores) e.g. Palm Beach and the rest of the bay (partner)



Short and mid-term Project: Fen restoration on Texada Island

Project Lead	Not decided yet
Financing	<ul style="list-style-type: none"><li>• \$40K</li><li>• Apply for money,</li><li>• Pay for monitoring – approx. 3 days of staff time every 3 years</li></ul>
Barriers	<ul style="list-style-type: none"><li>• Finding willing property owner interested in conservation</li><li>• Transfer risk to property owner</li><li>• Legislative restrictions, powers</li></ul>

Long term Project:

- Sustainable Forest land
- Incentivise Sustainable Forest Practice





## 8 Funding Sources

### 8.1 Federal Funds

#### 8.1.1 Low Carbon Economy Fund

On June 15, 2017, the Minister of Environment and Climate Change announced a \$2 billion Low Carbon Economy Fund. The Low Carbon Economy Fund is an important part of the Pan-Canadian Framework on Clean Growth for Climate Change. The Fund supports projects from provinces and territories, municipalities, Indigenous governments, businesses, and other organizations that provide innovative solutions to reduce GHG emissions and pollution, encourage innovation, and create cleaner and healthier communities.

The Low Carbon Economy Fund has two parts:

1. Low Carbon Economy Leadership Fund: \$1.4 billion is available to support the leadership commitments from provinces and territories that they outlined in the Pan-Canadian Framework on Clean Growth and Climate Change. Starting in fall 2017, provinces and territories worked with the federal government to finalize bilateral funding agreements. Provinces and territories are each eligible to receive \$30 million plus funding based on population.
2. Low Carbon Economy Challenge: \$500 million will be available for the implementation of the Pan-Canadian Framework and for projects submitted by provinces and territories, municipalities, Indigenous governments and organizations, businesses and both not-for-profit and for-profit organizations. Projects that best reduce GHG emissions and generate clean growth will be considered for funding. The Low Carbon Economy Challenge is divided into two streams: Champions stream and Partnerships stream. The \$450 million Champions stream provided funding to eligible applicants specifically provinces and territories, municipalities, Indigenous communities and organization, businesses and not-for-profit organizations. This stream is not closed. The \$50 million Partnerships stream provides funding through two separate opportunities: First intake and Second intake. The First intake of \$40 million is closed as of March, 2019. The Second intake (\$10 million) application process is open from August 13 to November 15, 2019 for small and medium businesses in Canada.

The Low Carbon Economy Leadership Fund and the Low Carbon Economy Challenge will reduce emissions through targeted projects such as:

- Rebates for installing high performance equipment and incentives to retrofit homes and commercial buildings;
- Projects improving energy efficiency for industries, supporting changes in their processes and helping them switch to lower carbon fuels; and,
- Programs for reforestation, enhanced forest management, and utilizing dead wood after forest fires or insect infestations.

### 8.1.2 Investing in Canada Plan

Through the Investing in Canada plan starting in 2016, the Government of Canada is planning to commit over \$180 billion over 12 years for public transit, green infrastructure, social infrastructure, trade and transportation infrastructure, and rural and northern communities. As part of the Investing in Canada plan, the Canada Infrastructure Bank has been created in late 2017 as an arm's length Crown Corporation, which serves as an additional tool to build new infrastructure by attracting private sector and institutional investors to support the transformational infrastructure that Canadian communities need.

Table 9. Investing in Canada Plan

	<b>Public Transit Infrastructur e</b>	<b>Green Infrastructur e</b>	<b>Social Infrastructur e</b>	<b>Trade and Transportatio n Infrastructur e</b>	<b>Rural and Northern Communitie s</b>
<b>Budget 2016</b>	\$3.4 billion over 3 years	\$5 billion over 5 years	\$3.4 billion		
<b>Budget 2017</b>	\$20.1 billion over 11 years through bilateral agreements with provinces and territories	\$21.9 billion (Of this, \$9.2 billion through bilateral agreements with provinces and territories)	\$21.9 billion over 11 years	\$10.1 billion over 11 years	\$2 billion over 11 years (to be allocated to provinces and territories on a base plus per capita allocation basis)
<b>Canada Infrastructur e Bank</b>	\$5 billion	\$5 billion		\$5 billion	
<b>National Programs</b>		\$2.8 billion			

The ongoing programs included in Investing in Canada Plan are:

- Clean Water and Wastewater Fund: provided to support the rehabilitation of water treatment, wastewater and storm water collection; separation of existing combined sewers and/or combined sewer overflow control; optimization and improved asset management; and upgrades to wastewater treatment infrastructure to meet applicable regulatory requirements (\$2 billion announced; \$1.74 billion approved)



- Public Transit Infrastructure Fund: provided to support the rehabilitation of public transit systems; the planning of future system improvements and expansions; enhanced asset management; and system optimization and modernization (\$3.4 billion announced; \$2.03 billion approved)
- Gas Tax Fund: provided up front, twice-a-year, to provinces and territories, who in turn flow this funding to their municipalities to support local infrastructure priorities (\$21 billion announced; \$18 billion paid out)
- New Building Canada Fund – Provincial-Territorial Infrastructure Component – National and Regional Projects: \$9 billion for projects that are nationally and regionally significant, and are predominantly medium- and large scale in nature (\$9 billion announced; \$1.6 billion approved)
- New Building Canada Fund – Provincial-Territorial Infrastructure Component – Small Communities Fund: \$1 billion for projects in communities with fewer than 100,000 residents (\$1 billion announced; \$1.1 billion approved)

In parallel with the above-mentioned programs, the Smart Cities Challenge will be implemented to encourage cities to adopt new and innovative approaches to city-building. The Government proposes to provide Infrastructure Canada with \$300 million over 11 years to launch a Smart Cities Challenge Fund. Modelled on a similar competition in the U.S., the Smart Cities Challenge would invite cities across Canada to develop Smart Cities Plans, together with local government, citizens, businesses and civil society. Winning cities will be selected through a nationwide, merit-based competition, facilitated by the Government's new Impact Canada Fund.

As there are important links between public infrastructure and climate change, Infrastructure Canada's 2018 Bilateral Agreements with provinces and territories include a requirement to apply a Climate Lens assessment (climate change resilience assessment and climate change GHG mitigation assessment) for certain projects. This applies to all Disaster Mitigation and Adaptation Fund projects and any winning proposals dealing with mitigation and adaptation under the Smart Cities Challenge.

## 8.2 Other Funds and Grants

### 8.2.1 Federation of Canadian Municipalities (FCM)

#### MUNICIPAL ASSET MANAGEMENT PROGRAM (MAMP)

- MAMP is designed to help Canadian municipalities strengthen infrastructure investment decisions based on sound asset management practices. The program provides asset management training, funding and information sharing to enable municipalities to access the data needed to plan effectively. MAMP is a five-year, \$50-million program, delivered by FCM and funded by the Government of Canada. Budget 2019 added \$60 million to the program to continue helping small communities to get skills training on how to inventory, grow and maintain infrastructure assets.



## qathet REGIONAL DISTRICT

- Project activities eligible for MAMP's grant for municipalities are asset management assessments (risks, needs), asset management plans, policies and strategies, data collection and reporting, training and organizational development and knowledge transfer
- Funding available: Up to 80% of total eligible project costs, to a maximum of \$50,000 to conduct eligible activities that result in improved asset management practices and are completed within 12 months (including one month for final reporting)
- Deadline: Year-round on a continuous basis
- <https://fcm.ca/en/programs/municipal-asset-management-program>

### MUNICIPALITIES FOR CLIMATE INNOVATION PROGRAM (MCIP)

- MCIP helps municipalities and partner organizations by providing funding, training and information sharing. It is designed to encourage Canadian municipalities to better prepare for and adapt to the new realities of climate change as well as reduce greenhouse gas emissions. MCIP is a five-year \$75-million program, delivered by FCM and funded by the Government of Canada.
- Transition 2050: An initiative that provides grants to 13 organizations that will help participating municipalities of all sizes to reach significant carbon emission reduction targets through peer learning, strategic planning and operational implementation. Through this initiative, municipalities should be able to develop long-term plans and projects contributing to a low carbon transition by 2050 in alignment with the target date as set out by the Paris Agreement as well as achieve emissions reduction in support of the federal Pan-Canadian Framework. (In BC, there are City Green Solutions and West Kootenay EcoSociety that provide this training to municipalities in BC.)
- Climate Adaptation Partners: An initiative that provides grants to partner organizations to offer training, guidance and learning activities to municipalities as they adapt to the effects of climate change and try to reduce their GHG emissions. The Government of Canada provided \$2.4 million in funding for these climate adaptation partner grants. (BC municipalities are part of partner organizations – Fraser Basin Council, ICLEI Canada, Selkirk College, Smart Prosperity Institute.)
- Climate and Asset Management Network: A professional network that have committed to combining their climate change goals and asset management processes. The members access peer learning opportunities, funding and training in two phases: Phase 1 – develop asset management policy, strategy and governance framework and Phase 2 – undertake a project to put lessons learned into action.
- Deadline: Year-round on a continuous basis
- <https://fcm.ca/en/programs/municipalities-climate-innovation-program>

### GREEN MUNICIPAL FUND (GMF)

- GMF supports initiatives that advance innovative solutions to environmental challenges. These projects improve air, water and land quality, reduce GHG emissions, and generate economic and social benefits to local communities. Through GMF,



municipalities share lessons learned and successful new models for advancing sustainability in communities of all sizes in all regions across Canada. GMF is delivered by FCM and funded by the Government of Canada. Budget 2019 added \$950 million to the Fund to increase energy efficiency in the built environment.

- GMF is allocated in the 6 focus areas: brownfields, energy, planning, transportation, waste and water. Funding available varies among the 6 focus areas as well as types of projects (plans, studies, pilot projects, and capital projects).
  - Plans: grant up to 50% of eligible costs to a maximum of \$175,000
  - Studies: grant up to 50% of eligible costs to a maximum of \$175,000
  - Pilot projects: grant up to \$500,000 to cover up to 50% of eligible costs
  - Capital projects: low-interest loans, in combination with grants are offered. Loan maximum is \$5 million, and the grant amount is 15% of the loan. Applicants with high-ranking projects may be eligible for a loan of up to \$10 million, combined with a grant for 15% of the loan amount, to cover up to 80% of the eligible costs.
- Deadline: Year-round on a continuous basis
- <https://fcm.ca/en/programs/green-municipal-fund>

### 8.2.2 BC Ministry of Energy and Mines

#### **CLEAN ENERGY VEHICLE FOR BC (CEVforBC™)**

- CEVforBC™ program provides point-of-sale incentives on eligible clean energy vehicles (CEV) to BC residents, businesses, non-profit organizations and local government organizations. The program is administered through the New Car Dealers Association of BC.
- Funding available: Up to \$3,000 for the purchase or lease of a new battery electric vehicle, hydrogen fuel cell electric, or longer range plug-in hybrid electric vehicle; \$1,500 for the purchase or lease of a shorter range plug-in hybrid electric vehicle
- Deadline: March 31, 2020 or until available funding is depleted, whichever comes first
- <http://www2.gov.bc.ca/gov/content/industry/electricity-alternative-energy/transportation-energies/clean-transportation-policies-programs/clean-energy-vehicle-program/cev-for-bc>

#### **CLEAN ENERGY VEHICLE SPECIALTY-USE VEHICLE INCENTIVE**

- This program targets specialty-use vehicles that are not included in the CEVforBC™ vehicle incentive program. This incentive program is focused on supporting businesses and fleets in adopting specialty-use clean energy vehicles. The 5 categories of specialty-use vehicles eligible for incentives under the program are: electric motorcycles, low-speed vehicle, forklifts, on-road medium duty, and airport and port specialty vehicles.
- Deadline: March 31, 2020 or until available funding is depleted, whichever comes first
- <http://www2.gov.bc.ca/gov/content/industry/electricity-alternative-energy/transportation-energies/clean-transportation-policies-programs/clean-energy-vehicle-program/cev-specialty-use-vehicle-incentive>



### 8.2.3 BC Ministry of Community, Sport and Cultural Development

#### **INFRASTRUCTURE PLANNING GRANT PROGRAM**

- Infrastructure Planning Grant Program offers grants to support local government in projects related to the development of sustainable community infrastructure.
- Funding available: Grants up to \$10,000 are available to help improve or develop long-term comprehensive plans that include, but are not limited to: asset management plans, integrated stormwater management plans, water master plans and liquid waste management plans.
- Deadline: January 15, 2020
- <https://www2.gov.bc.ca/gov/content/governments/local-governments/grants-transfers/grants/infrastructure-planning-grant-program>

### 8.2.4 BC Ministry of Aboriginal Relations and Reconciliation

#### **FIRST NATIONS CLEAN ENERGY BUSINESS FUND (FNCEBF)**

- The FNCEBF was created by the Clean Energy Act 2010 and has an initial appropriation of up to \$5 million to promote increased First Nation participation in the clean energy sector. The Fund provides agreements between the BC Government and successful applicant for Capacity funding and Equity funding. It also provides revenue sharing agreements between the BC Government and eligible First Nations.
- Funding available: Limited to a maximum of \$50,000 per eligible applicant for Capacity funding; Maximum total grant is \$500,000 per applicant for Equity funding
- Deadline: No specified deadline – rolling basis
- <http://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/consulting-with-first-nations/first-nations-clean-energy-business-fund>

### 8.2.5 Union of BC Municipalities (UBCM)

#### **ASSET MANAGEMENT PLANNING PROGRAM**

- The Asset Management Planning program was created in 2014 through a \$1.5 million contribution from the Ministry of Municipal Affairs & Housing. An additional \$2.75 million has been contributed to the program in order to support planning grants, training subsidies and the development of asset management resources.
- The program will assist local governments in delivering sustainable services by extending and deepening asset management practices within their organizations
- Funding available: grants up to \$15,000
- Deadline: Application can be submitted at any time; however, funding permitting, applications will only be reviewed two times in a year. Applicants will be advised of the status of their application within 60 days of the application deadlines. For 2019, there were two deadlines: May 3 and October 4. 2020 application dates are not announced yet.





- <https://www.ubcm.ca/EN/main/funding/lgps/asset-management-planning.html>

### 8.2.6 BC Hydro

#### **BC HYDRO POWER SMART SUSTAINABLE COMMUNITIES PROGRAM**

- The Power Smart Sustainable Communities Program, open to local governments (including regional districts) within the BC Hydro service territory, helps local governments meet the challenges of energy and GHG reductions by providing a range of services including expertise, education, program support and financial incentives.
- The program is offered on a first-come, first-served basis with preference for municipalities that are ready to move into action. Funds and resources are available for: community energy and emissions planning, community energy manager, project implementation, and community plans.
- Funding available: Up to \$20,000 in funding for energy experts to assist with community plan or up to 50% of salary of a full-time community energy manager (\$50,000 per year) for two years
- <https://www.bchydro.com/powersmart/business/programs/sustainable-communities/overview.html>

#### **CLEANBC COMMERCIAL NEW CONSTRUCTION PROGRAM**

- The Provincial Commercial New Construction Program provides funding for the design and construction of new high-performance buildings that use high-efficiency electricity in place of fossil fuels, in order to reduce GHG emissions. The Program supports electrification measures focused on the building heating system (space heating, ventilation, service hot water heating and heat recovery systems).
- Eligible projects result in at least 400 t CO<sub>2</sub>e in lifetime GHG savings, involve a technology that provides net electrical load growth, be new construction or major building renovation and be at the end of the concept design stage.
- Funding available: energy study incentive up to \$15,000 and capital incentives up to \$500,000
- Deadline: 9 months from the date of the signed energy study agreement to complete the energy study; 36 months from the date of the signed capital incentive agreement to implement the project
- <https://betterbuildingsbc.ca/incentives/cleanbc-commercial-new-construction-program/>

### 8.2.7 FortisBC

#### **COMMERCIAL PERFORMANCE PROGRAM FOR EXISTING BUILDINGS**

- FortisBC provides several types of funding to help building owner or long-term leaseholder identify and implement cost-effective energy conservation measures that are tailored to their building. For natural gas customers, the program provides funding for natural gas energy-efficiency projects. FortisBC and municipal electricity customers



are also eligible for funding for electricity energy-efficiency projects.

- Funding available: Up to 50% of the cost of the energy study to a maximum of \$25,000; capital incentive funding available to offset the additional cost of implementing the approved energy conservation measure over and above the cost of equivalent yet less efficient alternatives; implementation bonus funding equal to the preceding energy study funding amount, to a maximum of \$25,000 and additional incentives available through CleanBC program based on where the building is located at
- Deadline: any approved energy conservation measures must be installed and operational within 18 months of capital incentive funding approval; must operate the energy conservation measures for at least 36 months after installation
- <https://www.fortisbc.com/rebates-and-energy-savings/rebates-and-offers/rebates-details/commercial-performance-program-for-existing-buildings>

#### **NATURAL GAS BOILERS REBATES**

- The program is designed to encourage the use of high-efficiency, natural gas hydronic space-heating systems in commercial new construction and retrofit applications.
- Funding available: Rebate amounts are determined by the size and efficiency of the boiler (maximum amount of \$45,000 for condensing boiler; maximum amount of \$20,000 for mid-efficiency boiler)
- Deadline: Email application form within 365 days of the purchase date or installation date
- <https://www.fortisbc.com/Rebates/RebatesOffers/EfficientBoilerProgram/Pages/default.aspx>

#### **NATURAL GAS WATER HEATER REBATES**

- The program provides rebates for eligible high-efficiency natural gas storage water heaters, hot water supply boilers and tankless water heaters for commercial applications.
- Funding available: Rebate amounts are determined by the size and efficiency of the water heater (maximum amount of \$15,000)
- Deadline: Email application form within 365 days of the purchase date or installation date
- <https://www.fortisbc.com/rebates/home/natural-gas-water-heater-rebates>

### **8.2.8 Habitat Conservation Trust Foundation**

#### **ENHANCEMENT AND RESTORATION GRANTS**

- Habitat Conservation Trust Foundation provides approximately \$6 million each year in Enhancement and Restoration Grants. These grants are provided to projects that focus on freshwater wild fish, native wildlife species and their habitats; have the potential to achieve a significant conservation outcome; best represent the interests of the Trust Foundations' contributors, and maintain or enhance opportunities for fishing, hunting,



trapping, wildlife viewing and associated outdoor recreational activities.

- Funding available: No upper limit on funding requests. This grant typically supports projects that are larger in scope or funding need than the other grant types. Enhancement project annual budget typically range from \$10,000 to over \$100,000 annually.
- Deadline: November 1 every year until the fund runs out
- <http://www.hctf.ca/apply-for-funding/enhancement-grants/overview>

#### **PUBLIC CONSERVATION ASSISTANCE FUND**

- The Public Conservation Assistance Fund provides small grants to organizations and individuals who have a conservation project in mind but need financial help. Projects must be of a conservation nature, with priority given to projects that focus on activities that maintain, conserve or restore native (indigenous) fish and wildlife species and their habitats.
- Funding available: Fund eligible expenses up to \$10,000 in any one year; grants are modest, averaging about \$2,500 each; the total amount available over the life of a project is \$20,000.
- Deadline: May 16 every year
- <http://www.hctf.ca/apply-for-funding/pcaf-grants>

### **8.2.9 Real Estate Foundation of BC**

#### **REAL ESTATE FOUNDATION OF BRITISH COLUMBIA FUNDING PROGRAM**

- Real Estate Foundation of BC provides grants for research and knowledge mobilization, public and professional education, initiatives that support law and policy analysis/reform, and other land use and real estate related projects that benefit BC communities. The grants support sustainable practices in 5 key program areas: land use, built environments, fresh water, food lands, and real estate profession.
- Deadline: No specified deadline – rolling basis
- <http://www.refbc.com/grants>



## 9 Appendix A.

### Overview of the OCPs

The qRD entails vast land area with diverse geographical characteristics – urban, rural, island, forested inland, and First Nations treaty land.

Figure 1. Map of qathet Regional District



Source: qathet Regional District website



### 9.1 Electoral Area A Official Community Plan (Bylaw No. 500)

Electoral Area A has a greenhouse gas emission reduction target – to reduce greenhouse gas emissions by 25% by 2050. It also aims to increase ridership on regional transit. The policies that support these goals are:

- Encourage alternative transportation options such as regional transit, ride sharing and carpooling.
- Maintain Lund as a compact community and encourage local economic development to service the local community.
- Promote energy efficiency and energy substitution (switching from gasoline, diesel and propane to wood, sun, wind, biofuels, etc.) in home renovations and building.
- Encourage the retention and planting of trees and vegetation as natural carbon sinks to offset greenhouse emissions.
- Promote the development of public education materials on ways to reduce greenhouse gas emissions using local examples.

### 9.2 Savary Island Official Community Plan (Bylaw No. 403)

Savary Island has climate change adaptation and mitigation objectives to reduce greenhouse gas emissions by 33% by 2020. It will also reduce greenhouse gas emissions through reduced fossil fuel consumption and shifts to alternative forms of energy, promote the use of renewable energy and the development of renewable energy sources, and consider the impacts of climate change in all land use decisions. The policies in place to support these objectives are:

- The Regional District will seek guidance and financial assistance from other levels of government in implementing its climate change adaptation and mitigation policies.
- Islanders are encouraged to work with the Regional District and other levels of government to record and measure the current use of fossil fuels and greenhouse gas emissions. The resulting baseline data will allow us to measure progress towards reducing fossil fuel consumption and achieving GHG emissions reduction targets.
- Education can contribute to reducing fossil fuel consumption and promoting the use of alternative energy, and the Regional District will work with islanders and other levels of government to share knowledge and meet the objectives of this plan.
- Energy efficiency and energy substitution are critical for reducing greenhouse gas emissions in rural and remote communities like Savary Island, and the Regional District will work with islanders and other levels of government to promote energy efficiency and energy substitution (switching from gasoline, diesel and propane to wood, sun, wind and biofuels) in home renovations and building.
- The Regional District and islanders will encourage the retention and enhancement of natural tress and vegetation to offset greenhouse emissions through the implementation of environmental policies in section 2.1 and island open space policies in section 5.2 of this plan.



- The Regional District will work with islanders to encourage alternative land transportation through implementation of transportation policies in section 6.1 and 6.2 of this plan.
- The Regional District will work with islanders to prepare for sea level rise by encouraging Development Guidelines for shoreline areas in section 9.1 and 9.2 of this plan.

### 9.3 Electoral Area B Official Community Plan (Bylaw No. 465)

Climate change objectives of Electoral Area B are to reduce vehicular CO<sub>2</sub> emissions by 10% by 2021, increase ridership on regional transit, and consider the impacts of climate change in all land use decisions. The policies that aim to achieve these objectives are:

- Encourage alternative transportation options such as regional transit, ride sharing and carpooling.
- Promote energy efficiency and energy substitution (switching from gasoline, diesel and propane to wood, sun, wind, biofuels, geothermal, etc.) in home renovations and building.
- The Regional District will work with the local community, landowners, developers and the Ministry of Transportation and Infrastructure to provide safe walking and cycling pathways adjacent to Highway 101 and Padgett Road.
- The Regional District will seek guidance and financial assistance from senior governments for help in implementing its greenhouse gas emission reduction targets and policies.
- Promote the development of public education materials on ways to reduce greenhouse gas emissions using local examples.
- Encourage the retention and enhancement of trees and vegetation as natural carbon sinks to offset greenhouse emissions.
- Reduce vehicle trips in the region by promoting the extension of broadband and ability to work from home.
- Prepare for sea level rise by promoting provincial guidelines for building setbacks from the sea.

### 9.4 Electoral Area C Official Community Plan (Bylaw No. 467)

Climate change objectives of Electoral Area C are to reduce vehicular CO<sub>2</sub> emissions by 10% by 2021, increase ridership on regional transit, focus 50% of all new housing units within the community nodes of Black Point and Lang Bay, and consider the impacts of climate change in all land use decisions. The policies that aim to achieve these objectives are:

- Encourage alternative transportation options such as regional transit, ride sharing and carpooling.
- Promote energy efficiency and energy substitution (switching from gasoline, diesel and propane to wood, sun, wind, biofuels, geothermal, etc.) in home renovations and building.





- The Regional District will work with the local community, landowners, developers and the Ministry of Transportation and Infrastructure to provide safe walking and cycling pathways adjacent to Highway 101 and Padgett Road.
- The Regional District will seek guidance and financial assistance from senior governments for help in implementing its greenhouse gas emission reduction targets and policies.
- Promote the development of public education materials on ways to reduce greenhouse gas emissions using local examples.
- Encourage the retention and enhancement of trees and vegetation as natural carbon sinks to offset greenhouse emissions.
- Reduce vehicle trips in the region by promoting the extension of broadband and ability to work from home.
- Prepare for sea level rise by promoting provincial guidelines for building setbacks from the sea.

### 9.5 Electoral Area D Official Community Plan (Bylaw No. 551)

Texada Island does not have its own GHG emissions reduction target but its climate change mitigation and adaptation objectives are to reduce GHG emissions at the community level, and complete high-level risk assessments (sea level rise, coastal flooding, landslide, wildfire) to guide land use and development. The following policies and actions are proposed to ensure that the reduction of GHG emissions specifically, and the impact of climate change in general become part of the planning process for Texada Island.

- Promote the use of alternative transportation options (economic aviation initiatives at Texada Island Airport to generate revenues and offset costs of ongoing maintenance, maintenance of roads throughout the Island, enhancing ferry service, establishing ride-share programs and rural para-transit service, and encouraging the use of electric vehicles and the installation of publicly accessible charging stations)
- Encourage local agriculture and food production to reduce GHG emissions created by food transport
- Encourage the retention and enhancement of natural trees and vegetation as a natural carbon sink to offset GHG emissions
- Encourage fuel-efficient wood stoves through the establishment of a Woodstove Exchange Program
- Promote the “working towards zero” solid waste management philosophy that focuses on waste reduction, recycling and reuse prior to disposal
- Advocate provincial and federal governments to obligate industry to set targets for GHG emissions reduction and to implement actions to achieve those targets
- Ensure information from high-level risk assessments (sea level rise, coastal flooding, landslide, wildfire) is accessible and available to the community

## 9.6 City of Powell River Sustainable Official Community Plan (Bylaw No. 2370)

In the Sustainable OCP of the City of Powell River published in 2014, a comprehensive climate change mitigation and adaptation policies are specified. According to the Community Energy & Greenhouse Gas Emissions Inventory (CEEI), the City of Powell River set the 18% reduction target for 2016 and the 33% reduction target for 2020 compared to the base year of 2007. These targets are based on per capita emissions.

Table 3. The City of Powell River CEEI (2007, 2010)

Category	Updated CEEI		2007 Draft 2010 CEEI		2016 – 18% reduction target	2020 – 33% reduction target
	tCO <sub>2</sub> e	%	tCO <sub>2</sub> e	%	tCO <sub>2</sub> e	tCO <sub>2</sub> e
<b>On-road transportation</b>	42,027	64.6	48,190	69.0	34,460	28,020
<b>Buildings</b>	22,380	34.4	20,574	30.0	18,350	14,920
<b>Solid waste</b>	584	1.0	927	1.0	480	390
<b>Total</b>	64,991	100.0	69,691	100.0	53,290	43,330

Source: Sustainable Official Community Plan of the City of Powell River

The City's emissions reduction efforts are focused on emissions reductions in three primary sectors: road transportation, building energy use and solid waste. In 2010, GHG emissions from transportation account for 69% of the City's total GHG emissions. Policies to reduce transportation emissions are:

- Support the use of on-line carpool programs and vehicle sharing programs within the City and Region
- Continue transit service considerations with the aim of continuously increased ridership
- Implement an anti-idling policy for the City fleet and bylaw for the community
- Acknowledging that the vast majority of GHG emissions relate to on-road transportation, lobby the Federal and Provincial government to consider further regulations (e.g. low carbon fuels regulations, improved vehicle efficiency standards) and financial incentives in this regard; and to transfer more gas tax revenues (e.g. luxury vehicle tax, odometer tax) to local government for transit, non-motorized travel, and other similar programs having the objectives of reduce emissions

In addition, the City set Mode Share targets to reduce emissions in the transportation sector. In order to meet each of these targets, the City developed policies specific to each mode with a complete streets approach, which is a transportation policy and design approach that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities, regardless of their mode of transportation.



Table 3. The City of Powell River Mode Target

Mode	Powell River 2006 Data	Powell River 2020 Target
Vehicle Driver	80.0%	67%
Vehicle Passenger	9.0%	12%
Public Transit	1.5%	5%
Pedestrian	7.4%	10%
Cyclist	2.1%	6%

Source: Sustainable Official Community Plan of the City of Powell River

For building energy use, which accounted for 30% of the total GHG emissions, the City has the following policies in place:

- Develop education and awareness programs to reduce GHG emissions and energy usage in new and existing buildings and surrounding premises; including local climatic and energy conservation information sheets; emission reduction ideas for distribution with building, development, or subdivision application.
- Establish a density bonus and Building Permit fee reduction for buildings that are demonstrated to be substantially more sustainable than a typical building of its type. Buildings targeting Leadership in Energy and Environmental Design (LEED) Silver or higher certification, Passive House certification or Built Green Gold or higher certification will be considered for this benefit.
- Encourage on-site energy generation and efficiency systems such as heat pumps, solar panels, geothermal heating and cooling, etc. during development permit and building permit reviews (new buildings or renovations).
- Develop an incentive program for the installation of ultra-low flush toilets, rain water harvesting and grey water reuse in new developments. The program will also offer toilet replacement and rain water harvesting incentives for existing developments.
- Require the installation of water meters in all new commercial, industrial and multi-family development and encourage the retrofitting existing homes with water meters.
- Develop an incentive for heritage protection by recognizing energy already embodied within existing structures.

Although the City has very little emissions from solid waste sector, it still has detailed policies specifically for solid waste reduction & recycling and bio-solids disposal. As solid waste disposal is administered by the qRD, the City's role is limited to collection of residential waste within the City boundaries. The City sells garbage tags for curbside pick-up and then pays the QRD by the tonne for disposal of the collected waste. Commercial, industrial, and all non-residential solid waste is handled by a private collection system. The City plans to reduce solid waste by 40% by 2020 and minimize solid waste through a comprehensive program of recycling, composting, and education to encourage new waste reduction habits. Also, the City will develop a sustainable bio-solids management program with alternatives for beneficial use



of bio-solids.

According to the climate change impacts information provided by the Pacific Climate Impacts Consortium, the Powell River region can expect a mean temperature increase of almost 1 degree Celsius, more annual precipitation, less precipitation during summer months, less snowfall (and thus less snow pack for spring runoff aquifer replenishment), more growing degree days and frost free days, and fewer heating degree days by 2020. These effects are all projected to be amplified considerably by 2050. The City of Powell River proactively plans for climate change including adaptation to projected sea level rise, increase storm surges, increased coastal erosion, changes in vegetation and animal species. The policies to achieve this objective are as follows.

- Enhance partnerships with senior, regional and local governments, public agencies, community organizations, businesses and individuals for the effective coordination of climate change plans, policies and initiatives including:
  - Greenhouse gas reporting; and
  - Risk and vulnerability assessment of local climate change impacts.
- Integrate climate change mitigation and adaptation considerations into all City plans, policies and projects.
- Update minimum flood construction requirements to incorporate a projected sea level rise of one metre based on Provincial guidance.
- Maintain a comprehensive greenhouse gas emissions inventory that measures, analyzes and reports on emission levels in the community and evaluates the progress toward reduction targets on a routine basis.
- Develop a risk and vulnerability assessment of local impacts of climate change to inform policies, targets and actions for adaptation planning.
- Make infrastructure, asset management and capital expenditure decisions with fundamental considerations for climate change mitigation and adaptation, and energy resiliency.
- Work to diversify the energy supply by actively seeking out opportunities for local renewable energy production projects, district energy systems, waste heat reuse, and energy efficiency building retrofits.

On February 21, 2019, the City of Powell River declared a climate emergency, a global movement that urges to mobilize society-wide resources at sufficient scale and speed to protect civilization, the economy, people, species and ecosystems. Over 330 Canadian local governments have joined the movement up to date while countries and scientists around the world continue to join.

Since the declaration, the City of Powell River has been actively working to respond to this climate emergency by becoming carbon neutral in their corporate operations in 2019 and beyond and update its OCP to include the new community-wide target of reducing emissions by 45% from 2010 levels by 2030 and reaching net zero in 2050, in alignment with the IPCC Special Report recommendation of keeping the warming to below 1.5 °C above pre-industrial



levels, and climate change mitigation and adaptation measures into appropriate Development Permit Areas. The City will update all relevant plans, such as Integrated Community Sustainability Plan (ICSP), Community Energy and Emissions Plan (CEEP) and Carbon Neutral Action Plan (CNAP), to address the revised community emissions reduction target.



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