

**DATE:** May 4, 2020**FILE:** 5280-02**TO:** Chair and Directors  
Committee of the Whole**FROM:** Russell Dyson  
Chief Administrative OfficerSupported by Russell Dyson  
Chief Administrative Officer***R. Dyson*****RE: Carbon Neutral Update****Purpose**

To present the results of the 2019 Comox Valley Regional District (CVRD) corporate emissions inventory and to seek approval on a strategy to achieve our carbon neutral commitment for 2019.

**Recommendations from the Chief Administrative Officer:**

1. THAT the Comox Valley Regional District achieve carbon neutrality for 2019 with the purchase of 1,993 metric tonnes of verified carbon offsets from the Canada-wide Thermal Residential Heating Aggregation Project at a cost of \$10 CAD/MT, totalling approximately \$19,930 CAD.
2. THAT staff continue to explore the development of a climate action community granting program for the remaining 2019 carbon offset funds (~\$31,170) and report back to the Board with recommendations.

**Executive Summary**

- The CVRD is a signatory of the *British Columbia Climate Action Charter* and has been carbon neutral in its operations since 2012. This is achieved through a combination of energy efficiency improvements and purchase of verified carbon offsets (2019 emissions equal 1,993 tonnes).
- Each year, the CVRD reports on corporate emissions as part of our participation in the Climate Action Revenue Incentive Program (CARIP). CARIP is a conditional grant program that provides signatories to the *British Columbia Climate Action Charter* with funding equivalent to one hundred per cent of the carbon taxes that they pay directly.
- The 2019 proposal is to:
  - Purchase 1,993 tonnes of verified carbon offsets from the Canadian-wide Thermal Residential Heating Aggregation Project at an approximate cost of \$19,930 CAD; and
  - Report back to the Board in the coming months with recommendations on the remaining budgeted funds for 2019 (approximately \$31,170) including the feasibility of developing a climate action community granting program.

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**Background/Current Situation**

Through a combination of energy improvements to operations and purchasing carbon offsets, the CVRD has been carbon-neutral in its operations since 2012. As a signatory to the *British Columbia Climate Action Charter*, we participate in the CARIP, and there are three different components of this program:

1. The CARIP conditional grant program.
2. The annual inventory of greenhouse gas (GHG) emissions created during delivery of CVRD services.
3. Completion of the CARIP Climate Action / Carbon Neutral Progress Survey

CARIP is a conditional grant program that provides signatories to the *British Columbia Climate Action Charter* with funding equivalent to one hundred per cent of the carbon taxes that they pay directly. In order to receive a CARIP grant, local governments are required to publicly share their CARIP Climate Action/Carbon Neutral Progress Survey. The CARIP survey summarizes actions taken in the previous year and proposed for the following year to reduce corporate and community-wide energy consumption and GHG emissions. Details of the CVRD’s progress towards achieving carbon neutrality and carbon offset purchase must be included as part of the CARIP Carbon Neutral Progress Survey. The purchase of offsets must be completed and the survey made public by June 1, 2020 (no COVID-19 related delays have been announced at the time of writing this report). You can view previous CARIP Climate Action Surveys on the CVRD website under the heading, “CARIP Climate Action Surveys.”

Measuring CVRD Corporate Energy Use

In 2011, the Board approved the CVRD Corporate Energy Plan and adopted a target of reducing GHG emissions by 10 per cent below 2009 levels by 2015, which was achieved. In 2017, \$20,000 was allocated to an update of the CVRD’s Corporate Energy Plan. This update will examine the actions taken since the plan was completed in 2011, assess operational changes and associated increased GHG emissions, and identify further opportunities for energy efficiency improvements in CVRD operations. The update is tentatively scheduled for fall 2020.

GHG emissions have stayed relatively consistent in recent years with some variability due to factors such as cold weather, introduction of new CVRD services and frequency of fleet vehicle use. More than 50 per cent of the CVRD’s corporate emissions can be attributed to natural gas use, predominantly in the recreation complexes. The functions with the largest contributions to corporate emissions are recreation, sewer and regional solid waste.

The table and graph below outlines the history of CVRD corporate emissions since the CVRD corporate energy plan was completed.



Highlights from 2019 Corporate Actions to Reduce GHG Emissions

With the closure of a landfill cell at the Comox Valley Waste Management Centre in 2019, a gas capture system was installed and the methane is either flared or utilized to reduce GHG emissions. Instead of propane, a portion of the captured landfill gas (LFG) is used as fuel to heat the boiler at the new leachate treatment facility. This beneficial utilization of LFG is above and beyond the statutory requirements and reduced the landfill's emissions by an estimated 210 tonnes in 2019. Operation of the landfill is out of the scope of the CARIP reporting (only collection, transportation and diversion are included), therefore, this reduction is not reflected in our Corporate Energy Inventory. Staff explored claiming the beneficial use of LFG as a special project to reduce corporate emissions, unfortunately, the cost associated with the required third party validation and verification is cost prohibitive. The new corporate office was completed in 2019 with a number of energy efficiency features. Any associated GHG emissions reductions from these efforts would be reflected in the 2020 Corporate Energy Inventory.

**Carbon Offset Options**

While staff continue to look for ways to reduce corporate energy usage, the CVRD needs to purchase carbon offsets in order to attain its carbon neutral status. Staff have reviewed a variety of carbon offset options currently available in the marketplace, as listed below. All are verified to the applicable standards as recommended by the *Becoming Carbon Neutral: Guidebook for BC Local Governments*. Further project information is detailed in Appendix A.

**Canadian Offset Brokers**

<b>CARBONZERO</b>		
<b>Project</b>	<b>Location</b>	<b>Cost/MT</b>
Thermal Residential Heating Aggregation Project	Canada- wide	\$10 CAD
Transport GHG Reduction Project	Manitoba/Saskatchewan, Canada	\$12 CAD
Newfoundland Climate and Ecosystems Conservancy Project	Newfoundland, Canada	\$15 CAD
Ontario Biodiversity Afforestation Project	Ontario, Canada	\$17 CAD
Yingxin Glassworks Waste Heat to Energy	Hebei, China	\$5 USD (~ \$7 CAD)
TRR Landfill Project	Mississippi, USA	\$6 USD (~ \$8.40 CAD)

<b>OFFSETTERS</b>		
<b>Project</b>	<b>Location</b>	<b>Cost/MT</b>
Combined Darkwoods Forest Carbon Project and Wind Turbine Project	BC, Canada and Turkey	\$12 CAD
Darkwoods Carbon Project	BC, Canada	\$20 CAD
Great Bear Forest Carbon Project	BC, Canada	\$25 CAD

**American Offset Brokers**

<b>3 DEGREES</b>		
<b>Project</b>	<b>Location</b>	<b>Cost/MT</b>
Henrico County Landfill Gas Combustion Project	Virginia, USA	\$3.50 USD (~ \$4.90 CAD)

The Breathing Space Improved Cooking Stoves Program	India	\$6.50 USD (~ \$9.10 CAD)
Avoided Grassland Conversion Project	Oregon, USA	\$15.00 USD (~\$21 CAD)

CLIMATE TRUST		
Project	Location	Cost/MT
City of Astoria Bear Creek Forest Management	Oregon, USA	\$9 USD (~\$12.60 CAD)

While past practice has been to purchase cheap international offsets, staff recommend supporting a Canadian offset project this year. The Thermal Residential Heating Aggregation Project is an affordable Canadian option. The project replaces conventional residential fossil fuel combustion heating with solar heating systems located at private residences and commercial swimming pool locations across Canada. The offset provider, Carbonzero, is listed as a top performer in the David Suzuki Foundation and Pembina Institute’s *Purchasing Carbon Offsets Guide*. The Canadian Offset market is relatively small and choosing Canadian offset projects helps profile and support climate action in Canada.

**Remaining Carbon Offset Funds**

In 2019, the Board directed staff to explore the development of a climate action community granting program for the remainder of the 2019 carbon offset budgeted funds. In light of the current COVID-19 pandemic, supporting community projects could boost declining financial supports for organizations while catalyzing local climate action. Staff have prepared an Expression of Interest to be issued shortly, to determine if there is interest and capacity among any community partners to administer this program on behalf of the CVRD. Staff will report to the Board with recommendations in the coming months.

**Options**

	Project	Approximate Cost of Offsets	Remaining Budget for Local Project (e.g. Community Granting Program)
Option 1	Canada – wide Residential Heating Aggregation Project	\$19,930	\$31,170
Option 2	Henrico Landfill Gas Capture Project, Virginia, USA	\$9,770	\$41,230
Option 3	Direct staff to purchase one of the other offset options presented in this report.		

Staff are recommending Option 1 as it supports a Canadian offset project and will leave sufficient budget for a climate action community granting program or other community project (exact use of remaining funds to be discussed at a future meeting when more information is available).

**Policy Analysis**

In 2007, the CVRD became a signatory to the *British Columbia Climate Action Charter*, which includes commitments for signatories to be carbon neutral by 2012. On March 1, 2011 the Board approved the CVRD Corporate Energy Plan and adopted a target of reducing GHG emissions by 10 per cent below 2009 levels by 2015. The CVRD has allocated funds to update the CVRD’s Corporate Energy Plan to create new targets to reduce corporate emissions.

**Financial Factors**

Beginning in 2012, the CVRD included in its financial planning process budget line items to meet its carbon neutral objectives, such that carbon emissions not reduced through the corporate energy plan are offset through the purchase of verified carbon offsets. A cost of \$25/MT of estimated emissions is included in budgets for CVRD functions. For 2019 emissions, confirmed at a maximum of 1,993 tonnes, \$51,099 is available to purchase offsets. This amount of funding is based on prior estimates of 2019 emissions, which are slightly lower than actuals.

**Legal Factors**

The *British Columbia Climate Action Charter* is not legally binding, but in being a signatory, the CVRD has the ability to access the CARIP. As noted above, CARIP is a conditional grant that provides funding to signatories equivalent to one hundred per cent of the carbon taxes they pay directly. For 2019 operations, the CVRD's CARIP grant is approximately \$60,508.

**Regional Growth Strategy Implications**

The Comox Valley Regional Growth Strategy (RGS) being the “Comox Valley Regional District Regional Growth Strategy Bylaw No. 120, 2010” identifies the overall climate change goal of minimizing regional GHG emissions and planning for adaptation. The long-term target is 80 per cent reduction of regional GHG emissions from 2007 levels by 2050, with a mid-term target of 50 per cent reduction by 2030.

Through tracking corporate energy use, reducing emissions and purchasing verified carbon offsets, the CVRD is continually working towards the following objectives of the RGS:

- Objective 8A-5: Local governments should develop GHG reduction strategies for the operation, maintenance and construction of their buildings in the Comox Valley.
- Objective 8-C: Reduce GHG emissions in the solid waste sector.
- Objective 8-E: Plan for renewable energy generation.
- Objective 8-F: Plan for climate change adaptation.

**Intergovernmental Factors**

All three member municipalities in the Comox Valley have signed the *British Columbia Climate Action Charter* to become a carbon neutral local government.

**Interdepartmental Involvement**

All CVRD functions are responsible for working toward reduced GHG emissions and carbon neutrality. Staff from the planning services prepared the CARIP report with support from other CVRD departments.

**Citizen/Public Relations**

The public is consistently concerned about climate change and it is important that the CVRD show leadership and seek opportunities to reduce energy usage and related costs. As part of the CARIP requirements, a public report on the CVRD's climate action is prepared annually and posted on the [CVRD Climate Action web page](#).

Attachments: Appendix A – “Description of Carbon Offset Projects”

## **Description of Carbon Offset Projects**

### *Thermal Residential Heating Aggregation Project*

The project replaces conventional residential fossil fuel combustion heating with solar heating systems located at private residences and commercial swimming pool locations across Canada.

The solar hot water heating systems consist of rubber based solar collector panels and plastic piping. Emission reductions were determined based on Canadian Federal Government developed software that models swimming pool energy use for a variety of locations. Emission reduction calculations include emissions from material production, transportation and ongoing operations, for both the project and the baseline, using conservative approaches throughout.

### *Transport GHG Reduction Project*

The project is a result of comprehensive fuel efficiency strategies for reducing diesel consumption by Bison Transport. This project takes aim at transportation emissions, and more specifically, the emissions resulting from the distribution of products. Transportation represents a significant source of GHG emissions in Canada – in fact transportation contributed 28 per cent of Canada’s total GHG emissions in 2011. Bison Transport has reduced the GHG emissions of their truck fleet through a variety of efficiency projects and programs, these include: aerodynamic improvements, speed and driver management, truck idling control strategies, intermodal transportation, long Combination Vehicles strategy and tire efficient technology. These energy efficiency measures are additional to a baseline scenario, which consists of status quo on fuel efficiency strategies. This means Bison would not have undertaken any modification with the purpose of improving its truck fleet fuel consumption.

### *Newfoundland Climate and Ecosystems Conservancy Project*

The project is a GHG mitigation initiative through engineered wetland systems for wastewater treatment and are the first carbon offsets ever to be generated in the Province of Newfoundland and Labrador. The objective of this project is to treat wastewater and sludge from municipalities in an effective manner to eliminate the environmental impacts of discharging raw wastewater into watercourses and sea. The implemented wastewater treatment solution consumes much less energy and emits less GHG than typical wastewater treatment systems. This greenfield project regroups the wastewater treatment installations for the Municipalities of Appleton-Glenwood and Stephenville and is therefore a grouped project, aggregating GHG reductions resulting from project activities using the same technology.

### *Ontario Biodiversity Afforestation Project*

The project is the largest afforestation project of its kind in Ontario developed for the sole purpose of sequestering GHG emissions and the creation of carbon offsets. The project areas fall within the Boreal & Great Lakes St Lawrence Forest Regions and contain an abundance of land that had been cleared for the purpose of farming but is currently fallow. In the absence of this project, these lands would continue to remain underproductive for the timeframe of the project. Through the project, a minimum of 150 hectares of this land have been returned to its historical Boreal or Great Lakes St Lawrence forest conditions.

The project re-establishes long-lived forest species on land historically used for agricultural purposes and was motivated by the restoration of historical forest conditions for areas where certain conditions prohibit their natural renewal. Through private landowner participation, expertise, and the sharing of resources we ensured that these lands are returned to a productive forest. With over 402,000 trees planted, the project will sequester 77,000 tonnes of carbon throughout its lifetime. As

landowners have no legal obligation to re-establish their lands as forests, the project activities go above and beyond the “business as usual case” for both the landowner and project proponents. This project will benefit communities that rely on healthy Boreal and Great Lakes St Lawrence Forest, where local ecotourism economies are dependent on stable populations of moose, deer, fish and the quality of forest cover.

#### *Yingxin Glassworks Waste Heat to Energy*

Producing glass is an energy intensive process. The Yingxin Glassworks Factory has implemented measures to make it more environmentally friendly by installing state-of-the-art technology. The company is using a system to capture waste heat and channel it back into further glass production as electricity, significantly reducing their need for fossil-fuel derived power in their operations.

This project saw the installation of an innovative waste-heat-capture method at the Yingxin Glassworks Factory. Four boilers convert waste heat into energy, which drives two 6MW turbines to generate electricity that can then be used for glass production elsewhere in the facility. By recovering and using waste heat from the glass smelting furnaces, electricity is generated without needing more fuel, reducing the demand for fossil-fuel power.

In total, 76,000 MWh of electricity is produced each year, which equates to 67,000 tonnes of CO<sub>2</sub> emissions avoided annually. The electricity generated by this project meets approximately 55 per cent of the facility’s electricity demand for glass production. In addition to the environmental benefits, the project owner has provided scholarships to children and supporting schools, as well as elderly people and the local infrastructure. Local people are also permitted to borrow machinery and tools at no cost.

#### *TRR Landfill Project*

The Three Rivers Regional Landfill is a municipal solid waste facility operated by Three Rivers Solid Waste Management Authority. The landfill is approximately 600 acres with 207 acres active. During the reporting period, LFG was collected by a gas collection and conveyance system and subsequently combusted in an engine and an open flare. The landfill began accepting waste in 1995 and the collection and combustion system began on December 3, 2009.

#### *Great Bear Forest Carbon Project*

The Great Bear Rainforest is home to the largest intact coastal temperate rainforest remaining in the world. The resources of the Great Bear are vast and valuable to Coastal First Nations, environmental groups, forest companies and governments. Together, these groups have adopted an Ecosystem Based Management (EBM) approach that values the forest not as a source of lumber alone, but as a balanced system that sustains biodiversity and an enriched community.

#### *Darkwoods Forest Carbon Project*

Located in the Selkirk Mountains, the Darkwoods Forest Carbon Project, an improved forest management project, was developed by 3GreenTree and Offsetters in partnership with The Nature Conservancy of Canada. British Columbia’s Selkirk Mountains are ecologically important and spread across 136,000 acres. The area harbours a wide variety of habitats, including old-growth forests, alpine tundra, tumbling creeks and the deep, cold waters of Kootenay Lake. A plethora of plant and animal species utilize these habitats, and the conservation of the area is critical to ensuring their long-term viability.

#### *Wind Turbine Project in Turkey*

The project reduces over 80,000 tonnes of GHG emissions per year and reduces SO<sub>x</sub> and NO<sub>x</sub> emissions (which are a by-product of the standard power plants – mainly coal). The project will help

Turkey to stimulate and commercialize the use of grid connected renewable energy technologies and markets. Furthermore, the project will demonstrate the viability of grid connected wind farms, which can support improved energy security, improved air quality, alternative sustainable energy futures, improved local livelihoods and sustainable renewable energy industry development.

*Henrico County Landfill Gas Combustion Project*

The project voluntarily captures and destroys methane from the Springfield Road Landfill located in Henrico County, Virginia. The Project consists of two stages. Stage 1 is the expansion of the pre-existing well-field and replacement of a small candlestick flare with a larger capacity flare station. Stage 2 is the implementation of a beneficial use project where the LFG is destroyed in an on-site power generation facility and the resulting electricity is exported to the grid. The Project destroys LFG which otherwise would have been emitted directly to the atmosphere or destroyed in the small pre-existing system. The objective of the project is to proactively manage LFG and reduce GHG emissions.

*The Breathing Space Improved Cooking Stoves Program – India*

The project is a voluntary Programme of Activities that disseminates energy efficient cook-stoves to households in India. India's domestic sector is one of its largest primary energy consumers with 75 per cent of energy requirements met by fuel-wood and agricultural waste. Cooking alone is responsible for 90 per cent of household energy consumption, and demand is increasing annually at a rate of 8.1 per cent. As per the World Health Organization Comparative Risk Study, approximately 400,000 women and children die every year in India due to exposure to smoke from household use of solid fuels. The Breathing Space Programme, by replacing traditional stoves, contributes towards solving the indoor air pollution problem by deploying cleaner and greener cooking stoves in addition to reducing GHG emissions.

*Avoided Grassland Conversion Project*

Voluntary grasslands project on three ranches totaling 22,000 acres in Oregon's Wallowa County. This investment in the grassland conservation sector helps protect one of the most ecologically important prairies in the United States. Investment funding provided additional financing for the purchase of ranch conservation easements by The Nature Conservancy. The easements will permanently protect soil carbon from release through tilling or other forms of land conversion.

This investment supports ranching livelihoods and rural economies. The agricultural conservation easements ensure that the ranches can continue being grazed without the threat of conversion to row cropping and supports ranch operations with annual carbon payments.

*City of Astoria Bear Creek Improved Forest Management Project*

The City of Astoria manages the Bear Creek watershed, a roughly 3,700 acre commercial forest which provides fresh drinking water to Astoria residents and timber harvest revenue to support city services. The forest has been certified by the Forest Stewardship Council and forest management is guided by a forest management plan and the forest has recently undergone a new inventory. This inventory revealed that timber harvest could be increased to roughly 3 million board feet per year without having any negative impact on drinking water, FSC certification or breaking Oregon forestry law. However, the city has chosen instead to harvest only roughly a third of this amount- the level of current harvest- and replace the foregone harvest revenue with offset credits. As a result of this decision, the project is able to generate offsets under the ACR Protocol because it is not managing harvesting levels in an economically optimal manner and, therefore, is able to generate carbon offsets.