



2022 PSO CLIMATE CHANGE ACCOUNTABILITY REPORT (CCAR)

SCHOOL DISTRICT NO. 71 (SD71)
COMOX VALLEY SCHOOLS



Comox Valley Schools

A Community of Learners

INNOVATIVE • INQUISITIVE • INCLUSIVE

*We acknowledge with respect and gratitude that this report was produced on the
Unceded Traditional Territory of the K'ómoks First Nation, the traditional keepers of
this land on which Comox Valley Schools operates.*

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Executive Summary

As a Public Sector Organization (PSO), this report meets the legislative requirements under the [Climate Change Accountability Act \(Section 8.1\)](#) and the [Carbon Neutral Government \(CNG\) Regulation](#). To be considered carbon neutral, Comox Valley Schools (SD71) has paid \$53,500 for the retirement of offsets reflecting 2140 tonnes of carbon dioxide equivalents tCO₂e produced and reported by our district in 2022. Our emissions included: 51 tCO₂e from paper, 187 tCO₂e from mobile energy use (e.g. fleet) and 2239 tCO₂e from stationary energy (e.g. buildings) use.

Throughout SD71 we are committed to preparing all learners for a changing world. We value educational excellence, community engagement, organizational stability, environmental stewardship, physical health, and mental well-being. Our district is a positive, progressive, and growing school district situated on the east coast of Vancouver Island on the traditional territory of the K'omoks First Nation. We have a student body of approximately 9700 learners and serve one regional district, three municipalities, two island communities and the K'omoks First Nation. Fifteen elementary schools, one middle school, three secondary schools along with a handful of additional schools and programs to meet the needs of our diverse learning community.

Key tenants of our planning and strategic initiatives to reduce our greenhouse gas (GHG) emissions and energy consumption stem from legislated targets and a willingness to actively reduce our emissions rather than purchase offsets. The foundation and incentives to make significant reductions in our emissions stems from provincial targets:

- By 2025: 16% GHG emissions reduction compared to 2007 levels
- By 2030: 40 % GHG emissions reduction compared to 2007 levels
- By 2040 60% GHG emissions reduction compared to 2007 levels
- By 2050: 80% GHG emissions reduction compared to 2007 levels

While our district is on track to meet the 2025 emissions reduction target of 16%, significant efforts and investments will be required to reduce our stationary emissions,

which comprise around 90% of our emissions, in order to achieve long term targets. We will continue to target and apply for funding directed towards reducing the energy consumption from buildings, specifically towards electrification projects.

PART 1. Legislative Reporting Requirements

Declaration Statement

This Climate Change Accountability Report (CCAR) for the period January 1st, 2022, to December 31st, 2022, summarizes our greenhouse gas (GHG) emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2022 to reduce our GHG emissions, and our plans to continue reducing emissions in 2023 and beyond.

By June 30, 2023, School District No. 71 (SD71), also referenced as Comox Valley Schools, will post this Climate Change Accountability Report to our website at www.comoxvalleyschools.ca/.



Emissions Reductions and Plans

A. Stationary Sources (e.g. buildings, power generation)

Comox Valley Schools is committed to minimizing GHG emissions and has met the challenges of rising heating costs and increased demand on aging facilities. Energy efficiency is a key strategy in SD71's approach to minimizing GHG emissions from stationary sources. Senior management plays an active role in seeking out and securing funding opportunities that will result in GHG emission reductions. The following four principles are of key

importance when assessing the need for replacing equipment:

- I. Creating healthy environments, including air, temperature and noise for students, teachers and support staff
- II. Reducing GHGs
- III. Reducing energy consumption and waste
- IV. Increasing equipment and system efficiency

When reviewing existing mechanical systems in service within SD71 and evaluating recommendations to upgrade or replace with new systems, the new systems are assessed to meet the following minimum requirements:

- significantly reduce the carbon emissions produced by the building systems;
- conserve energy (electricity and fossil fuels) and decrease operating costs;
- demonstrate a successful approach to addressing climate change.

When looking at building retrofits for SD71, energy conservation measures that are practical and cost-effective are reviewed and assessed for implementation with a goal to ensure estimated savings are optimized and maintained during the useful life of the initiative and beyond. It is SD71's intent to tie together climate adaption policies with planned capital upgrades to ensure that future work reduces GHG emissions and improves infrastructure resiliency.

Ongoing plans to continue reducing emissions from stationary sources include making sure our building heating and cooling management systems are operating in the way they are intended. Optimization of building HVAC systems, lighting upgrades and domestic hot water upgrades (e.g. moving away from storage tank hot water systems to using boiler plant heat as a means to heat our hot water) are all under review. The district is integrating strategic and tactical energy management planning and systems into our processes and is reviewing, assessing, and analysing mechanical systems to ensure they are programed effectively and efficiently for our educational institutional needs and goals, leading to reduced emissions.

Energy Efficiency Projects Completed in 2022 include:

- I. Installation of a high efficiency boiler plant at North Island Distance Education Facility (NIDES) with provincial CNCP and AFG funding.

- II. Direct Digital Controls (DDC) upgrades at Courtenay Elementary School with AFG funding.
- III. Domestic hot water tank upgrades at Courtenay, Aspen and Queneesh Elementary with SD71 funds.
- IV. Phase 1 – Building controls and LED lighting, upgrades at Glacier View Secondary with funding from provincial capital. The second phase of project plan for 2023 is to install a photovoltaic array.

Natural Gas is and has been a dominant, low-cost energy source for buildings. Roughly, 80% of SD71 buildings have fuel heating. Natural gas and propane have much higher



Figure 1 – New condensing boilers at NIDES

tCO₂e emissions than electricity. In recent years, as funding and budgets have allowed the district has been upgrading older non-condensing boilers to condensing boilers. Since 2010, 95% of SD71's boiler inventory has been upgraded to higher efficiency boiler systems. High efficiency boilers offer better annual fuel utilization efficiency (AFUE) ratings resulting in reduced natural gas consumption and increased student and staff comfort. Key upgrades have been noted in previous

Climate Change Accountability Reports (CCARs) and can be found on SD71's website, [here](#). The NIDES boiler replacement was one of the last to be completed in the district. The expected annual GHG reductions with the new boiler plant are estimated at 40 tCO₂e. The few remaining boiler replacement projects within the district are being earmarked for electrification options.

Energy efficiency upgrades such as the controls at Courtenay Elementary and Glacier View Secondary will simplify operational processes and allow for system automation and energy efficiency in the workplace. Controls are a key component to optimizing HVAC efficiency, aiding in reducing energy waste , reducing energy consumption, and increasing equipment and system efficiency.



Figure 2 – Courtenay Elementary

Domestic hot water tank upgrades replaced non-condensing, gas-fired tanks with indirect



Figure 3 – Depiction of a coiled heat exchanger inside an indirect water heater unit

fired water heaters at Aspen, Courtenay and Queneesh Elementary Schools. An indirect water heater is a well insulated storage tank that holds a coiled heat exchanger. Efficiencies are gained by using the power of existing high efficiency boilers to heat stored domestic water. This streamlined approach saves energy because our existing

central heating system now does all the work; the indirect heater simply facilitates heat transfer from the boiler.



Figure 4 – New Queneesh indirect water heater



Figure 5 – Aspen Elementary



Figure 6 – Queneesh Elementary

Ongoing light-emitting diode (LED) lighting upgrades were completed in various school classrooms and office spaces. The new LED lighting consumes 40% less electricity, has lower maintenance and a much longer life span than the former fluorescent tube lighting, which contains mercury and uses heat to create light. Glacier View Secondary saw the largest inventory upgrade in 2022.



Figure 7 – Glacier View Secondary

B. Mobile Sources (e.g. fleet vehicles, off-road/portable equipment)

Mandating greater vehicle fuel economy is a straightforward way to reduce GHG's from motor vehicle use. Optimal fuel performance is a driving factor embedded within SD71's

vehicle policy and mileage & fuel consumption tracking. Finding ways to reduce fuel consumption promotes fuel efficiency and reduces emissions; the SD71 vehicle policy incorporates tips from Natural Resources Canada including idling reduction tips and strategies. Management reviews the vehicle policy with maintenance staff annually. The policy includes notes on GPS tracking, highlighting that we track vehicle location, speed, acceleration, harsh braking and cornering.

The district continues to remove older fleet vehicles and purchase newer vehicles that are fuel-efficient and produce less emissions. In 2022, we purchased two Ford Transit Connects, which are more compact and fuel efficient than our Chevrolet Express vans, which currently make up most of our fleet.

Stable funding options will be necessary for a cleaner fleet and will direct resource and organizational capacity in moving forward with development and implementation of a Clean



Fleet Plan. Researching and investigating suitable equipment for trades vehicles that are lower or zero emissions along with exploring strategic avenues for decarbonizing the SD71 fleet continued in 2022. The district anticipates purchasing its first

electric vehicle and establishing a fleet decarbonization plan during the 2023 reporting year.

C. Paper Consumption

Comox Valley Schools is gaining efficiencies and reducing paper consumption by updating processes to online formats and using technology to reduce paper consumption. During 2022, SD71 implemented online student registration options; the process was previously heavily paper based. Ongoing efforts to reduce paper consumption will include continued efforts to use technology to integrate more of our business processes to electronic formats. Of note SD71 has seen an 56% decrease in its emissions associated with paper consumption since 2010.

2022 GHG Emissions and Offsets Summary Table:

Comox Valley Schools, SD71, 2022 GHG Emissions and Offsets Summary	
GHG emissions for the period January 1 - December 31, 2022	
Total BioCO ₂	6.41
Total Emissions (tCO ₂ e)	2147
Total Offsets (tCO ₂ e)	2140
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO ₂ e)	0
Grand Total Offsets for the 2022 Reporting Year	
Grand Total Offsets to be Retired for 2022 Reporting Year (tCO ₂ e)	2140
Offset Investment (\$) [Grand Total Offsets to be Retired for 2022 Reporting Year x \$25 per tCO ₂ e]	$(2140 + 0) \times \$25$ = \$53 500

Retirement of Offsets:

In accordance with the requirements of the *Climate Change Accountability Act* and Carbon Neutral Government Regulation, School District No. 71 (**the Organization**) is responsible for arranging for the retirement of the offsets obligation reported above for the 2022 calendar year, together with any adjustments reported for past calendar years (if applicable). The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Change Strategy (**the Ministry**) ensuring that these offsets are retired on the Organizations behalf, the Organization will pay within 30 days, the associated invoice to be issued by the Ministry in an amount equal to \$25 per tonne of offsets retired on its behalf plus GST.

Clean Government Reporting Tool (CGRT) GHG Offset Summary:

	School District 71 - Comox Valley
	2022
Direct Fuel Combustion	
t CO ₂ e, GHG, All	1824
Purchased Energy	
t CO ₂ e, GHG, All	77.5
Mobile Energy Use	
t CO ₂ e, GHG, All	187
Office Paper	
t CO ₂ e, GHG, All	51.0
Fugitive Emissions	
t CO ₂ e, GHG, All	

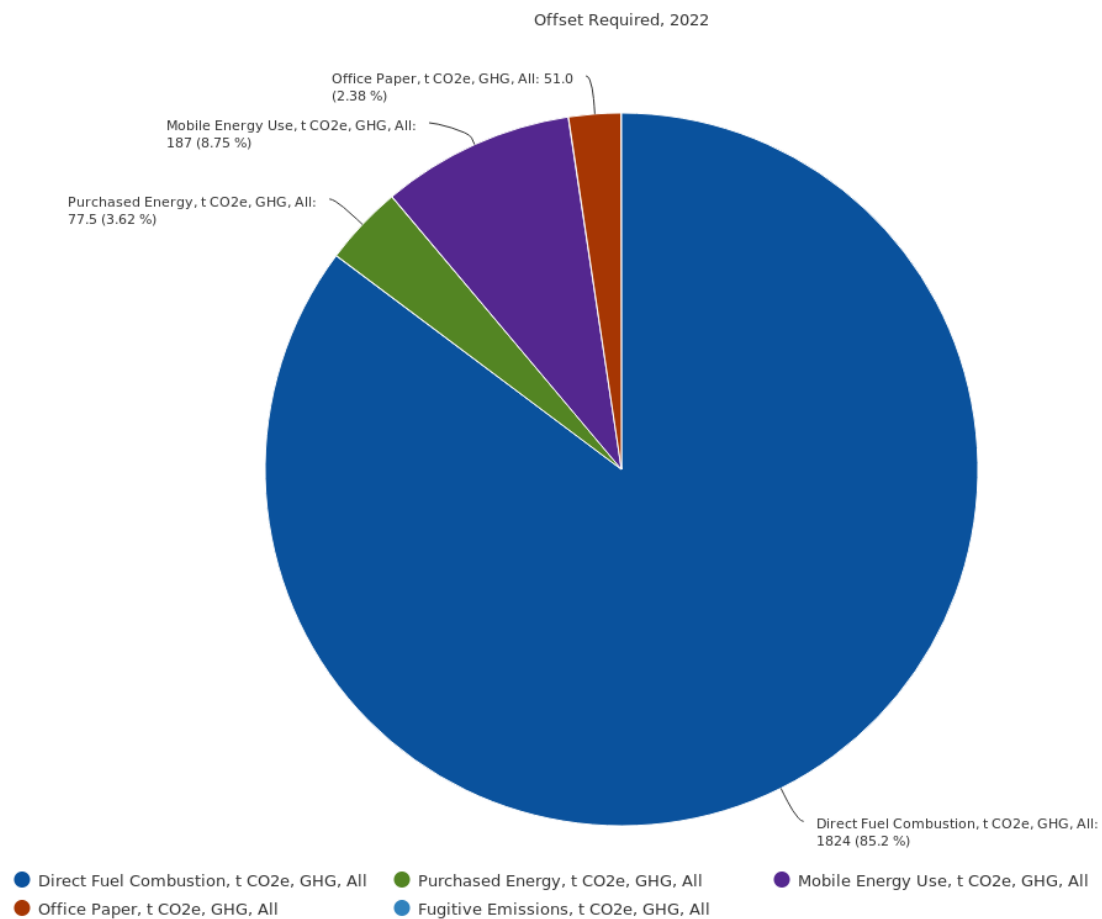


Figure 7 – CGRT graph showing proportional GHG emissions in tCO₂e by SD71 in 2022

PART 2. Public Sector Leadership

2A. Climate Risk Management

Along with accounting for GHG emissions, SD71 is preparing for a changing climate and managing climate related risks. Comox Valley Schools incorporates climate risk management



Figure 8 – Huband Park Elementary

strategies into its operational and capital planning via energy management and building resilience infrastructure planning alongside GHG targets, operational budgets, and available resources.

Flooding at Huband Park Elementary School during intense rain events in 2022 prompted climate risk assessments for the asset along with management plans regarding service delivery. Operational mitigation measures include managing sheet drainage to capture and remove subsurface water.

2B. Other Sustainability Initiatives

As part of its [Value Statement](#), The Board of Education of SD71, Comox Valley Schools, embraces and encourages Global Awareness and Environmental Stewardship. Furthermore, Organizational Stability & Environmental Stewardship is one of four strategic priorities of the district's [Strategic Plan](#) with the goal of cultivating environmental stewardship by fostering the following actions:

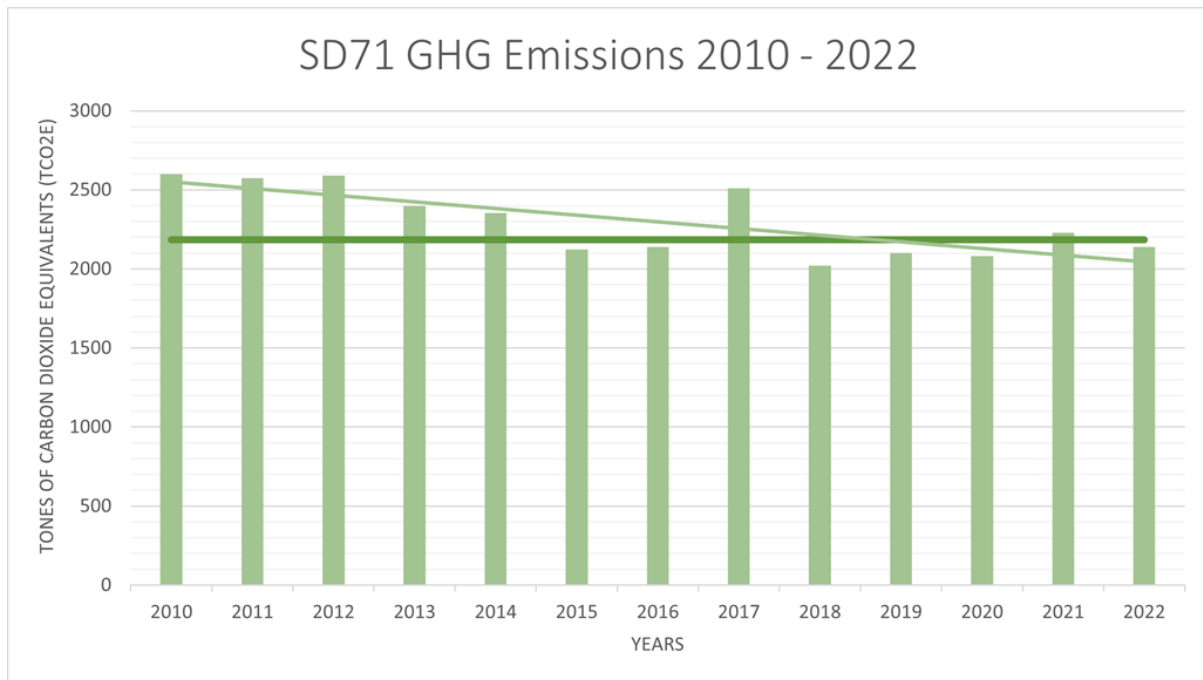
- Align outdoor and environment learning opportunities for long-term sustainability
- Reduce carbon emissions and environmental footprint
- Support the establishment and augmentation of school garden projects
- Reduce the use of single-use plastics throughout the district
- Implement strategies for zero waste by increasing recycling and composting efforts in all facilities
- Augment the Active Travel Program and public transit commute initiatives

Additionally, senior management continues to assist teachers, support workers, parents, and students in their educational environmental & sustainability activities and initiatives throughout SD71 and community. A key conversation topic of late has been behaviour modifications around patterns that started during COVID-19, including keeping doors and windows open. Space heaters as well as open doors and windows throw off HVAC systems and create inefficiencies. Messaging has been centred around individual actions making a difference and reminding students and staff that energy conservation and consumption are directly linked to our GHG emissions. Avoidable energy draws such as closing interior and exterior doors and eliminating use of space heaters, including moving towards putting on layers as an alternative to space heaters, have been emphasized in dialogue. Other avoidable energy draws including turning off projectors and computers when not in use are part of the conversations around simple behaviour changes that can make a difference. Reminding folks that energy systems work as a whole and are directly linked to our biggest GHG emissions, highlighting that when working efficiently the impact contributes to cost savings and less emissions.

2C. Success Stories

Reviewing data from 2010, the year SD71 started collecting and reporting data on GHG emissions, reveals we are tracking to meet the 2025 GHG reduction target of 16%.

The graph below illustrates SD71's historical GHG emissions. The horizontal dark green line indicates the 2025 reduction target from 2010 emissions levels. The general trend for the district is illustrated by the angled lighter green line and the columns show emissions in tonnes of carbon dioxide equivalents annually over the years.



Since 2010, SD71 has reduced paper consumption by over half, this is a notable achievement; however, recognizing that paper consumption makes up a nominal part of our overall emissions (e.g. 2.8% of total emissions; in 2022), we are striving towards increased reductions in our buildings and fleet emissions in coming years. The table below outlines 2022's GHG reductions compared to our 2010 baseline year.

Emissions Source	2022 GHG Emissions (tCO2e)	2010 GHG Emissions (tCO2e)	2022 Results Compared to 2010 Baseline
Stationary (e.g. buildings)	1902	2239	-15%
Fleet	187	205	-9%
Paper	51	115	-56%
Total Emissions	2140	2559	-16%

Comox Valley Schools saw a 15% decrease in stationary (buildings) emissions in 2022 compared to 2010. Reviewing this against the district's square footage, which has largely remained the same since 2010, along with our student population numbers that have increased approximately 17%, indicates the district is gaining efficiencies from our energy upgrades while incurring intensified room usage due to increasing enrollment over time.

Comox Valley Schools will continue to integrate strategic and tactical energy management planning and systems into our processes. A key metric used to quantify the energy

consumption of a building, expressed in kilowatt per square meter per year: Building Energy Performance Index (BEPI), is a useful tool we use for reviewing and monitoring operational systems performance. The metric provides insight and guidance into optimization and reviewing gaps and barriers in our systems.

Looking Ahead

Comox Valley Schools aims to contribute to the 2030, 2040 and 2050 emission reductions targets as set out by the BC government (see Appendix C for an overview of on GHG reporting). To meet the 2030 targets, we will need to further reduce our GHG emissions an additional 24%, and 44% and 64% respectively to meet 2040 and 2050 targets. Senior leadership team members within SD71 will work with provincial capital funding branch and our school board trustees to align new policies and compliance strategies to support net-zero emissions plans.

A key question SD71 has been reflecting on in operational strategies is how do we de-carbonize? In 2021 two key documents: [British Columbia's Building Electrification Road Map](#) and Clean BC's [Roadmap to 2030](#) were released highlighting some key concepts around moving towards de-carbonization, such as fuel switching, electrification and heat pumps. Additionally, the provincial [2022 Climate Change Accountability Report](#), document has significant tenets pointing towards electrification along with updating regulations shifting away from incentives for conventional gas-fired equipment such as furnaces and boilers, to support for building-envelope improvements and all kinds of high efficiency heat pumps – electric, gas and hybrid. Energy efficiency gains within current combustion building systems are not enough to meet climate targets. Electrification is an overarching theme in moving towards de-carbonization. With this in mind, SD71's continuous optimization and energy efficiency strategies will encompass an Electrification Assessment in the coming years.

Building emissions are the largest segment of our GHG's, typically making up approximately 90% of our annual emissions. The emissions are the result of stationary fuels, namely natural gas, at this time, used to heat and power the schools, maintenance, and administration buildings. Consequently, the largest GHG reduction initiatives and applications for funding are directed towards reducing the energy consumption from buildings. Capital and

operations planning will identify and incorporate future energy efficiency projects, including electrification initiatives that will reduce consumption in district facilities. Project assessments and initiatives will factor in the *Annual Facility Grant (AFG)* project planning process, the *Annual Capital Plan*, the *Long Range Facilities Plan (LRFP)*, and *Carbon Neutral Capital Program (CNCP)* funding requests.

Planned Energy Efficiency Projects for 2023:

- I. Installation of a photovoltaic array at Glacier View Secondary as part of Phase 2 upgrades with funding from CNCP funding.
- II. Electrification of one of the following HVAC systems: Ecole Secondaire Mark R. Isfeld Secondary, Queneesh Elementary or Highland Secondary with CNCP or Annual Capital Plan funding.
- III. New School Board Office is undergoing renovations that include electrification of the building from gas. Comox Valley Schools is funding this project.
- IV. Phase 1 – Building controls and LED lighting, upgrades at Denman Island Elementary with CNCP funding. The second phase of project plan for 2024 is to install a photovoltaic array.
- V. Fleet Decarbonization Plan including fleet assessment, service assessment and Zero Emission Vehicle (ZEV) transition scenarios will be completed and reviewed for feasibility and implementation options. Funding for the plan will come from SD71 and a grant from CleanBC.

Executive Sign-off:

Signature G. Manning Date MAY 31, 2023

Name (please print) GEOFF MANNING Title ACTING SUPERINTENDENT

APPENDICES

Appendix A: Overview – Comox Valley Schools

Comox Valley Schools (SD71) is a positive, progressive, and growing school district situated on the east coast of Vancouver Island on the traditional territory of the K’omoks First Nation. Located within the Valley are the municipalities we serve: City of Courtenay, Town of Comox, Village of Cumberland and the Regional District, including the surrounding communities of Black Creek, Merville, Royston, Union Bay, Hornby Island and Denman Island. Each location providing their own unique services and community cultures. School District No. 71 (SD71) is one of 60 school districts in British Columbia.

QUICK FACTS – SD71 serves:

- 1 Regional District
- 2 Islands
- 9700 + students
- 3 Municipalities
- 1 First Nation



Vancouver Island

Fifteen Elementary Schools: Airport, Arden, Aspen Park, Brooklyn, Courtenay, Cumberland Community School (K-9), Denman Island, École Puntledge Park, École Robb Road, Hornby Island, Huband Park, Miracle Beach, Queneesh, Royston, Valley View

One Middle School: Lake Trail Community School (Gr. 6-9)

Three Secondary Schools: Georges P. Vanier, Highland, École Secondaire Mark R. Isfeld

Additional Schools/Programs: Glacier View Secondary Centre (Alternate Gr. 8-12), Nala’atsi Alternate Program, Navigate (NIDES), International Student Program (ISP)

SD71’s Vision and Mission Statement:

“An inclusive learning community that embraces diversity, fosters relationships and empowers all learners to have a positive impact on the world. To inspire engaged, compassionate, resilient lifelong learners and cultivate a collaborative community together.

Board of Education 2019 – 2023

Appendix B - Overview - GHG Reporting

In 2007, the BC Government took a major step in the fight against climate change by setting aggressive greenhouse gas (GHG) reduction targets and making it legally binding. The [Climate Change Accountability Act](#) (CCAA), formerly titled “Greenhouse Gas Reduction Targets Act (GGRTA)” updates legislated targets for reducing greenhouse gases. Under the Act, BC's GHG emissions are to be reduced by the following listed targets set for the Public Sector Organizations (PSOs) and regulated by the Carbon Neutral Government:

- ❑ By 2030, BC will reduce GHG emissions by 40 per cent, compared to 2007 levels
- ❑ By 2040, BC will reduce GHG emissions by 60 per cent, compared to 2007 levels
- ❑ By 2050, GHG emissions will be reduced by at least 80 per cent below 2007 levels

To meet legislated targets, all PSOs including school districts, are required to be carbon neutral. The phrase “carbon neutral” is a way to explain and take responsibility for the GHGs emitted. As a PSO “adding” GHGs to heat buildings, the emissions can be “subtracted” by purchasing carbon offsets. These purchased offsets support innovative BC-based projects that create economic opportunities and fosters the use and development of clean technologies across the province.

All public sector organizations follow a five-step process to become carbon neutral and have been doing so since 2010. Comox Valley Schools has implemented the five steps to become carbon neutral. Firstly, measuring operational GHG emissions from district buildings, district vehicles and district wide paper consumption. Secondly, reducing emissions where possible through an integrated approach. Thirdly, offsetting SD71 GHG emissions by purchasing an equivalent amount of high quality, made-in-BC carbon offsets. Fourthly, reporting annually on progress through the Climate Change Accountability Report (CCAR) and finally, verifying data and emissions through the BC government online application Clean Government Reporting Tool (CGRT) to convert GHG emissions into a unit of measure. All PSOs enter their data into CGRT which then converts this data into tonnes of carbon dioxide equivalents (tCO₂e).