



PSO Climate Change Accountability Report | 2023



ABBOTSFORD
SCHOOL DISTRICT
RESPECT OPPORTUNITY INNOVATION

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Declaration statement

This PSO Climate Change Accountability Report for the period January 1, 2023 to December 31, 2023 summarizes our greenhouse gas (GHG) emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2023 to minimize our GHG emissions, and our plans to continue reducing emissions in 2024 and beyond.

Executive Summary

The District began its GHG emissions reduction efforts back in 2001 and had reduced its natural gas and electrical consumption by over 30% each by 2010 when GHG emission reporting began. Since 2010 the District has further reduced its GHG emissions in all three focus areas (paper, buildings, and fleet) and currently ranks as one of the ten lowest producers of GHG emissions in the province compared to other school districts on a ton of GHG emissions per student basis. These initiatives have also benefited the District by reducing operating expenses and gradually reducing the amount of carbon offsets that the District needs to invest in to maintain carbon neutrality each year.

In 2023, the District undertook several GHG emissions reduction projects including:

- The replacement of end-of-life natural gas boilers with new high efficiency natural gas boilers at four sites.
- Partial envelope upgrades to improve insulation, airtightness, and moisture protection at three sites.
- DDC upgrades to improve equipment operational efficiency at two sites.
- Small scale LED lighting upgrades at one site.
- The purchase of three electric vehicles to replace end-of-life gas vehicles for the IT department.

Also, in 2023 the District completed a cooling tower upgrade at Terry Fox Elementary which will help improve the long-term climate resilience of this site.

Looking towards the future, the District has several projects planned for 2024 to help further reduce GHG emissions and improve climate resilience. These include:

- LED lighting upgrades at four sites.
- End-of-life rooftop or air handling unit replacements at three sites that will incorporate DDC upgrades to improve equipment operational efficiency.
- Domestic hot water heater upgrades at two sites.
- A chiller replacement at one site that will include VFD & DDC upgrades to improve operation efficiency and increase the long-term climate resilience of this site.

The District is also constructing additions at two sites in 2024 to provide much needed classroom space. This may potentially add to the District's overall energy consumption and absolute annual GHG emissions. The new additions are designed to be less energy and emissions intensive on a per square meter basis than older facilities due to improvements in the BC building code and heating equipment efficiency ratings in recent years. Effective building commissioning and the implementation of GHG reduction initiatives at other sites as outlined above will be used to help mitigate the potential additive emissions impacts of these two school expansions.

2023 Greenhouse Gas Emissions Overview

This section provides an overview of the District’s current and historical total GHG emissions, as well as a breakdown of emissions by source and on a per student basis to allow for more granular comparison of 2023 results. This is followed by a summary of the District’s historic and planned GHG emissions reduction initiatives and their operational cost impacts. The section concludes with the emissions and offset summary table and retirement of offsets statement as required by regulation.

Current State of the Inventory

As of 2023, the Abbotsford School District had reduced its GHG emission by 15% in terms of absolute emissions and 15% in terms of weather normalized GHG emissions (Figure 1). This falls 35% short of the Province’s target of a 50% reduction in absolute emissions below 2010 levels by 2025.

The projects undertaken in 2023 and those planned for 2024 and beyond are geared towards continuing to reduce GHG emissions every year while upholding the District’s strategic focus on 4 key pillars - Student Success, Optimized Resources, Engaging Opportunities and Progressive Workforce.

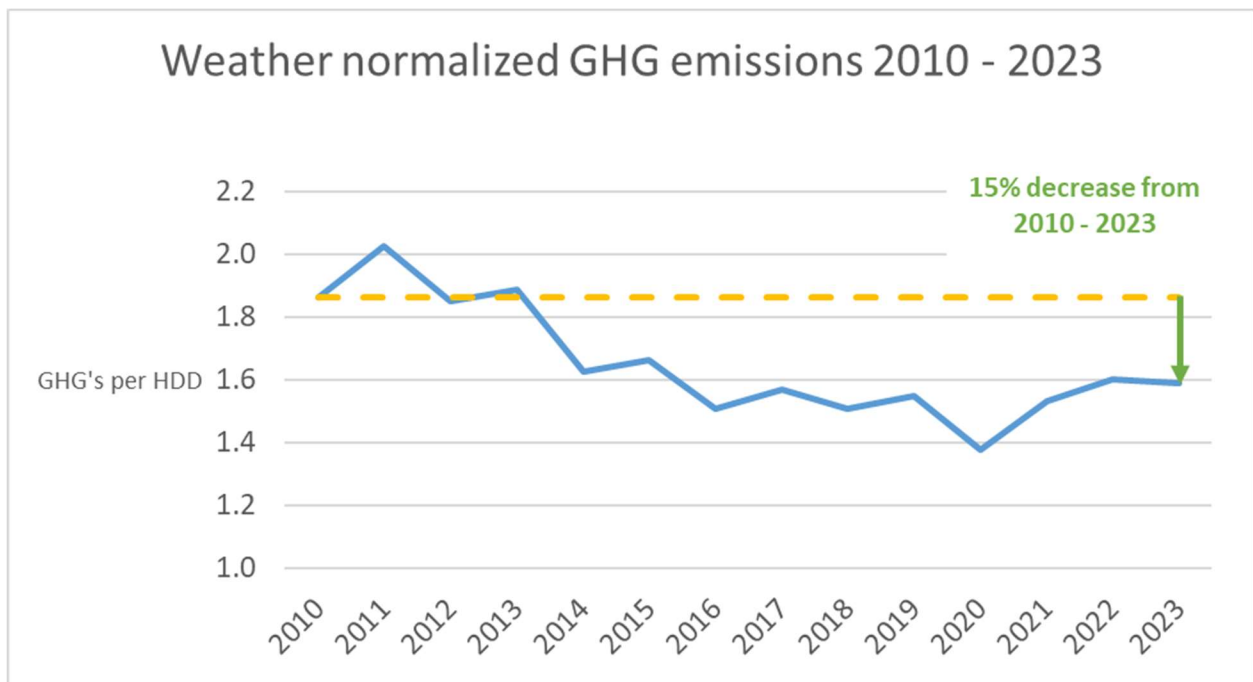


Figure 1. Weather Normalized GHG emissions from 2010- 2023 shown in tCO₂e per Heating Degree Day (HDD)

GHG Emissions by Source

Stationary Sources



Stationary sources accounted for 2,656 tCO₂e or approximately 64% of the District’s total 4,142 tCO₂e in 2023. This represents the biggest source of GHG emissions in the District. Emissions come from the use of natural gas and electricity for building heating and cooling (Figure 2). Electricity is also used for ventilation and lighting as well as for the electronics, appliances and computers needed to operate schools and other district facilities.

Mobile Sources



The second highest source of GHG emissions in the District is vehicles, which accounted for 1290 tCO₂e or 31% of the District’s total emissions in 2023. Mobile emissions come from the fleet of buses the District owns and operates for student transportation as well as from fleet service and administrative vehicles.

Paper



GHG emissions from paper are the smallest source of emissions in the District accounting for only 197 tCO₂e or 5% of the District’s total emissions in 2023. Schools are the largest consumer of paper products in the District with the remainder being used by school district administration and support services.

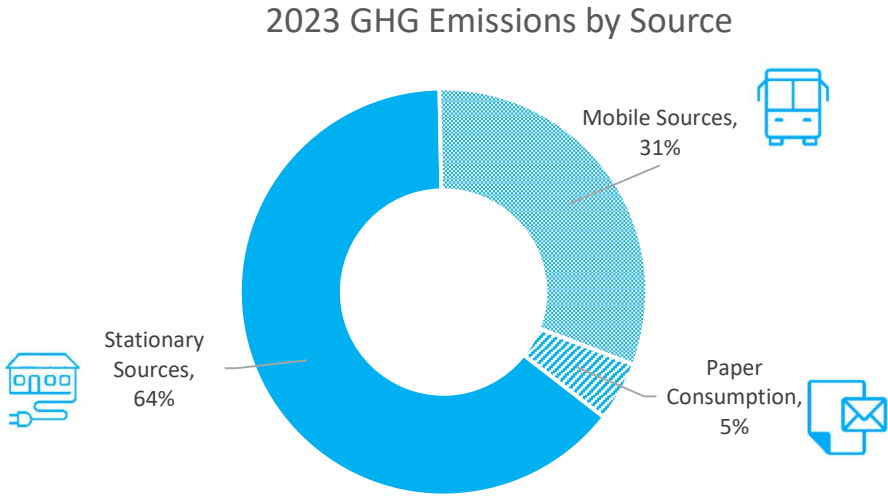


Figure 2. Breakdown of GHG emissions by source in 2023

How Do We Compare?

As of 2022, the Abbotsford School District was one of the ten lowest emitters in the province in terms of GHG emissions per student (Figure 3). Its GHG emissions were less than half the provincial average and approximately 8% below the Fraser Valley and Great Vancouver Regional District (FVRD&GVRD) average. Between 2010 – 2022, the District’s weather normalized emissions fell by 14% which is compared to the provincial average reduction of 18% and the Fraser Valley and Great Vancouver Regional District average reduction of 13% (Figure 4). **Note 2023 data for all districts will not be available until 2024.*

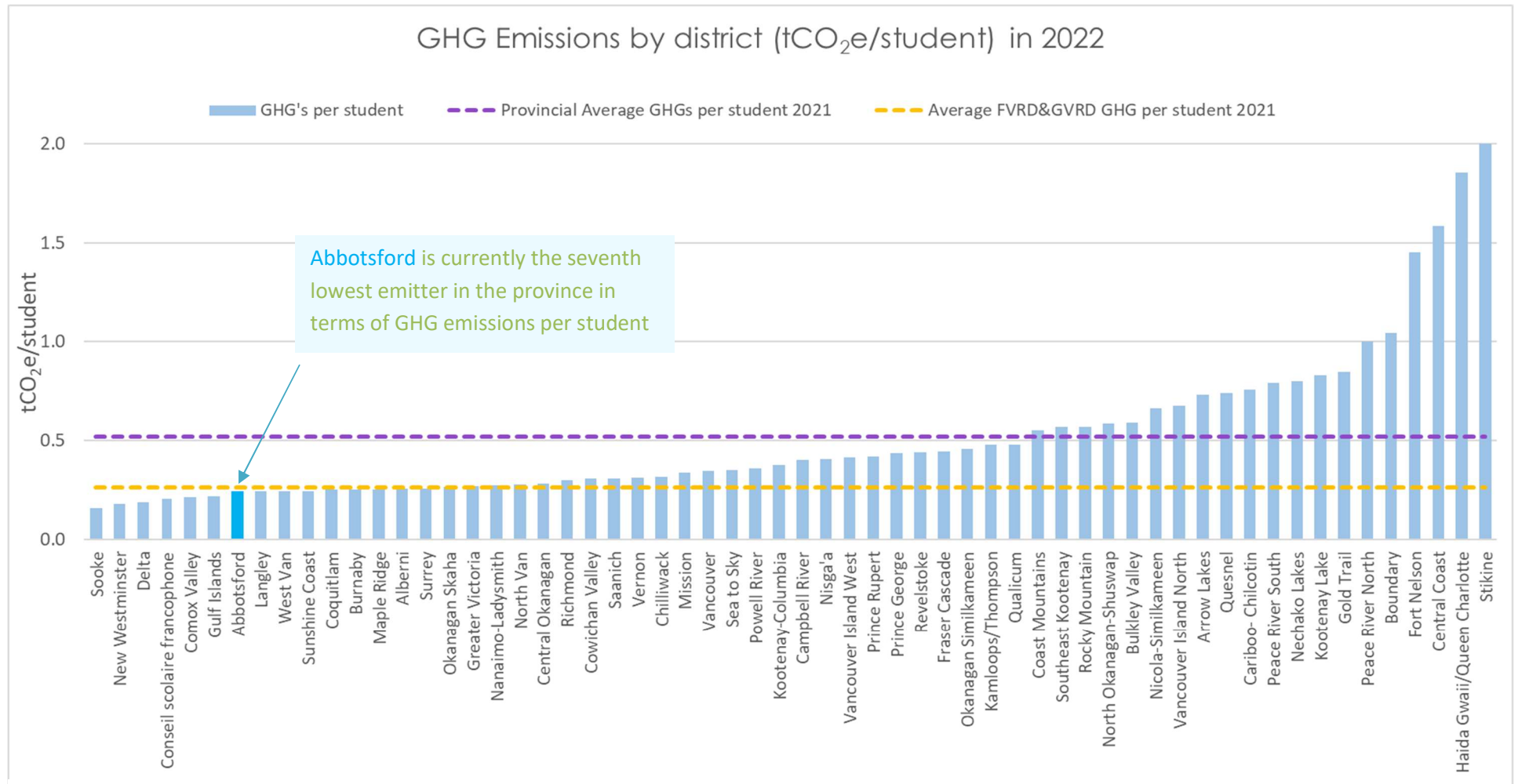


Figure 3. 2022 GHG emissions in tCO₂e per student

Data Sources: This graph was generated using data from CleanBC’s 2022 Carbon Neutral Government Year in Review Summary and BC Schools - Student Enrolment and FTE by Grade Report

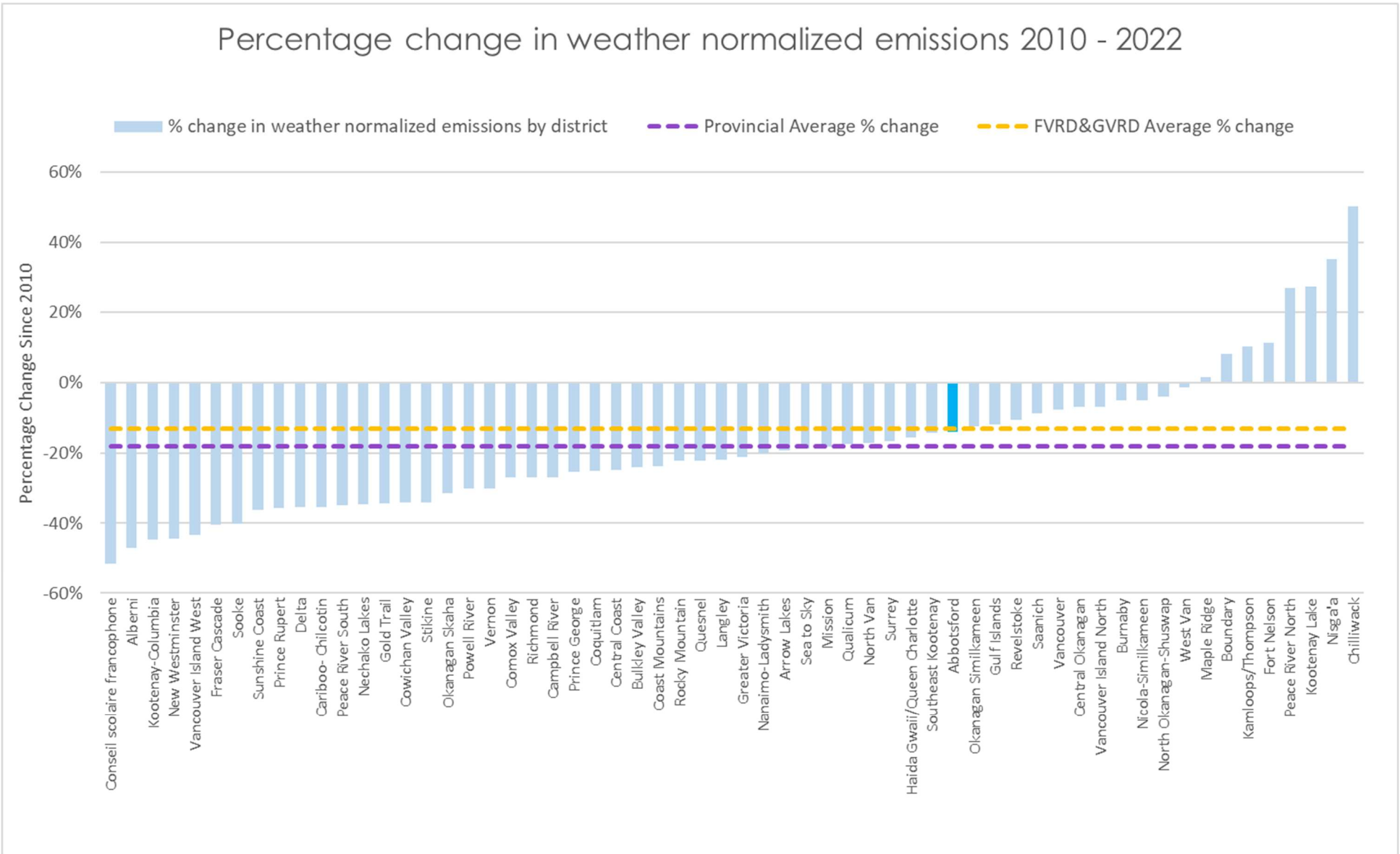


Figure 4. 2022 GHG percentage change in weather normalized GHG emissions per student

Data Sources: This graph was generated using data from CleanBC's 2022 Carbon Neutral Government Year in Review: Summary, and The Government of Canada's historical weather database, https://climate.weather.gc.ca/historical_data/search_historic_data_e.html, accessed May 8, 2024.

Historic Actions Taken to Reduce Greenhouse Gas Emissions

Electricity and Natural Gas Consumption

Abbotsford School District’s journey to reduce greenhouse gas emissions began in 2001 when the first energy conservation program was implemented. The District achieved significant reductions in both its electricity and its natural gas consumption between 2001 and 2010 (Figure 5) although GHG emissions were not being tracked at that time. Through a combination of behavior change programs, equipment upgrades and building system optimization, the District reduced electricity consumption by 36% and natural gas consumption by 31% between 2001 and 2010. Since GHG reporting began in 2010, the District has continued to decrease its building energy use, reducing electricity consumption by an additional 12% and natural gas consumption by an additional 29% as of 2023 compared to 2010 levels. This results in a total electricity reduction of 43% and a total natural gas reduction of 51% since energy conservation efforts began in 2001.

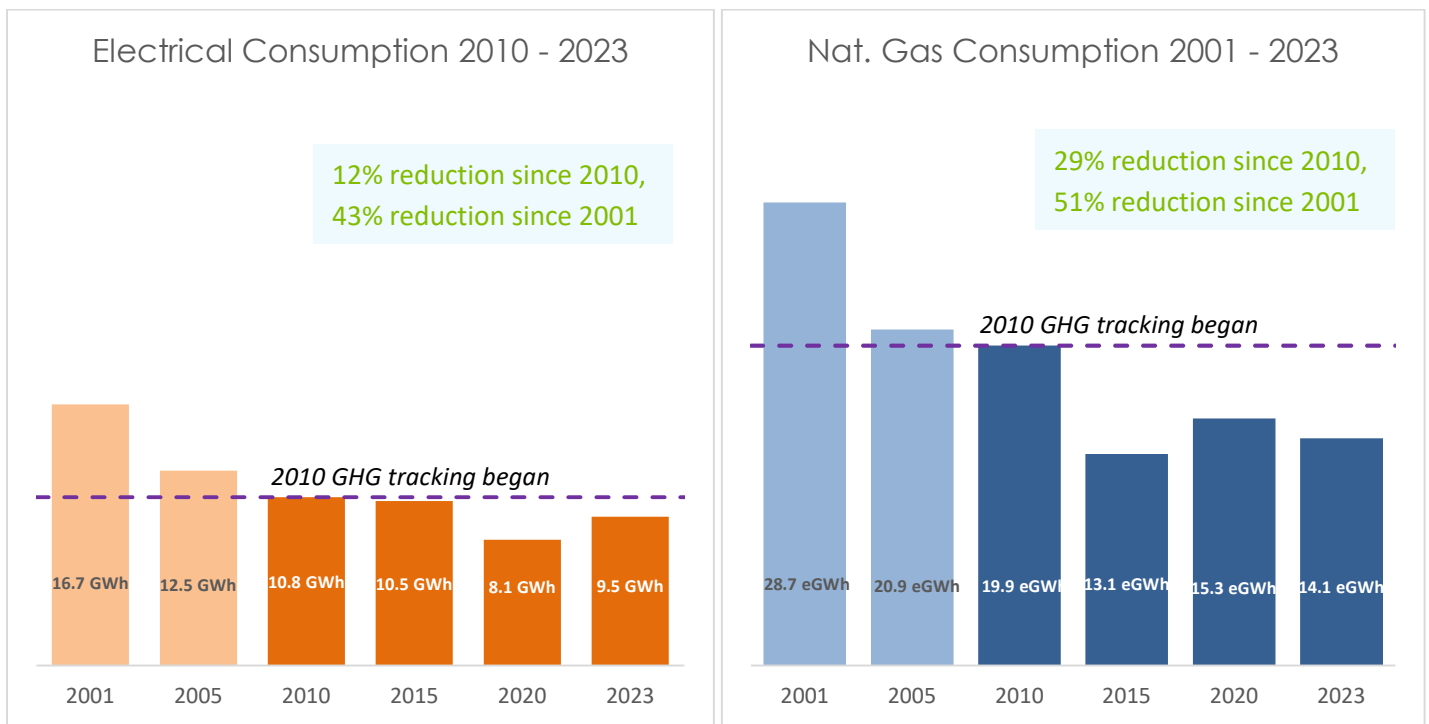


Figure 5. Historic Electricity Consumption Reductions and Historic Natural Gas Consumption Reductions

Fleet Vehicles

The District purchased its first battery electric vehicle (BEV) in 2016. It has since added an additional six BEVs for IT department use. The District has also installed a network of electric vehicle charging stations throughout the District to facilitate electric fleet vehicle adoption, and to support staff who are making the switch to zero emission vehicles for personal use. While chargers are currently primarily available at middle and secondary schools, the District is gradually expanding the network to elementary schools as well.



Paper

The District has undertaken numerous paper reduction initiatives. At the district level, many forms and procedures have been digitized. At the school level, the IT department is providing teachers, students, and staff with an ever-increasing array of digital resources to help facilitate learning and reduce paper use. The District has also been exploring alternative fiber paper options such as sugar paper but has not yet found an economical and effective alternative.



Cost Savings from GHG Reductions

The District's GHG mitigation efforts have resulted in the co-benefit of decreasing operating costs and reducing the amount of carbon offsets the District must invest in each year (Figure 6). The District saves an average of approximately \$500,000 per year in avoided utility costs and 2023 carbon offset costs are \$20,500 lower compared to those paid in 2010.

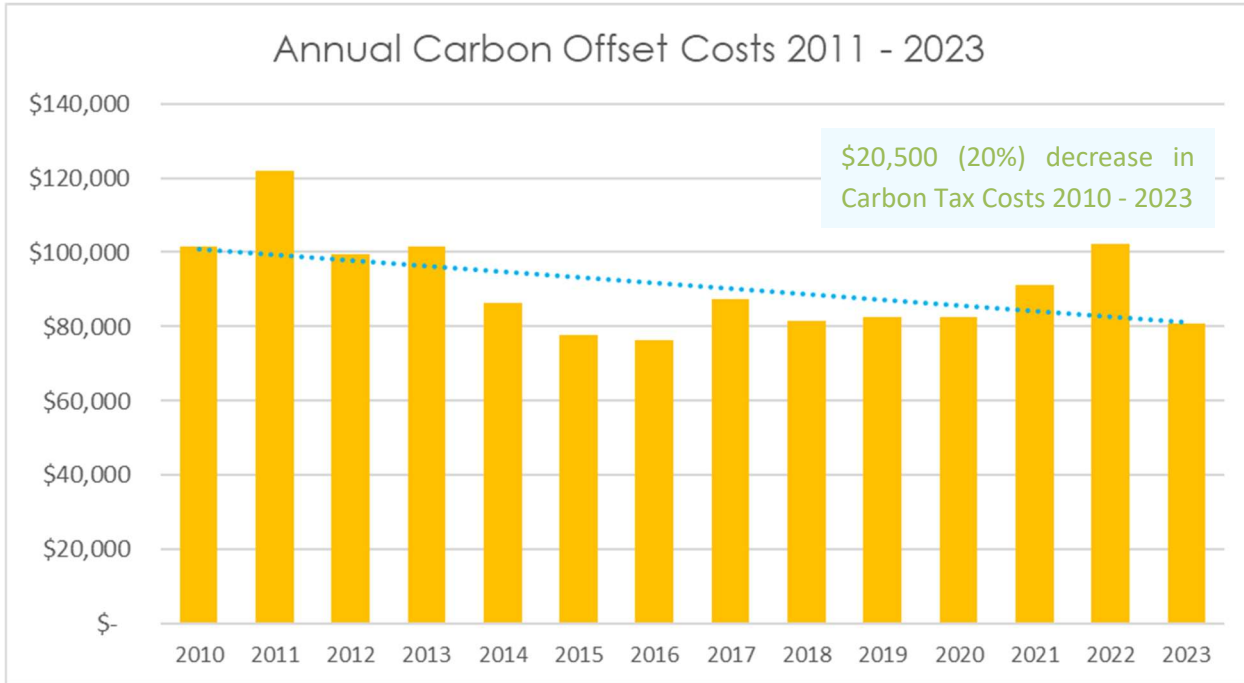



Figure 6. Annual carbon offset costs between 2011 - 2023


Summary of Actions Taken to Reduce Greenhouse Gas Emissions in 2023

Stationary Sources (Buildings) 			
Actions Planned	Measure Type	Site	Project Description
	Lighting	WJ Mouat Secondary	<ul style="list-style-type: none"> LED lighting upgrades for the gyms
	Mechanical	Chief Dan George Middle	<ul style="list-style-type: none"> Exhaust fan & DDC controls upgrade
		John Maclure Elementary	<ul style="list-style-type: none"> Boiler upgrade
		Margaret Stenersen Elementary	<ul style="list-style-type: none"> Boiler upgrade
		Mountain Elementary	<ul style="list-style-type: none"> Boiler upgrade
		Rick Hansen Secondary	<ul style="list-style-type: none"> Boiler upgrade DDC controls upgrade
	Building Envelope Upgrades	Blue Jay Elementary	<ul style="list-style-type: none"> Partial envelope upgrade
		Dave Kandal Elementary	<ul style="list-style-type: none"> Partial envelope upgrade
		South Poplar Elementary	<ul style="list-style-type: none"> Partial envelope upgrade

Mobile Emissions (Fleet)		
Actions Taken	Measure Type	Project Description
	EV's and EV infrastructure	<ul style="list-style-type: none"> Three electric passenger vehicles were added to the fleet to replace end-of-life gas passenger vehicles in the IT Department.

GHG Reduction Actions Planned for 2024

To continue reducing its GHG emissions the District is planning to complete the following projects in 2024:

Stationary Sources (Buildings)			
Actions Planned	Measure Type	Site	Project Description
	Lighting & Electrical Infrastructure	Abbotsford Senior	<ul style="list-style-type: none"> Theatre lighting
		Bradner Elementary	<ul style="list-style-type: none"> LED lighting & lighting controls upgrade Electrical panel upgrades to coincide with lighting upgrades
		Godson Elementary	<ul style="list-style-type: none"> LED lighting & lighting controls upgrade Electrical panel upgrades to coincide with lighting upgrades
		Ten Broeck Elementary	<ul style="list-style-type: none"> LED lighting & lighting controls upgrade Electrical panel upgrades to coincide with lighting upgrades
	Mechanical	Barrowtown Elementary	<ul style="list-style-type: none"> Domestic hot water heater upgrade
		Chief Dan George Middle	<ul style="list-style-type: none"> Domestic hot water heater upgrade
		Thomas Swift Elementary	<ul style="list-style-type: none"> Rooftop and make-up air unit replacements + DDC upgrade
		W.A. Fraser Middle	<ul style="list-style-type: none"> Air handling unit replacement + DDC upgrade
		WJ Mouat Secondary	<ul style="list-style-type: none"> Rooftop unit replacement + DDC upgrade
Additions	Margaret Stenersen Elementary	<ul style="list-style-type: none"> School addition underway including the addition of a new boiler plant 	
	Auguston Elementary	<ul style="list-style-type: none"> School addition underway including the addition of a new boiler plant 	

Emissions and Offset Summary Table

Abbotsford School District 2023 GHG Emissions and Offsets	
GHG Emissions created in Calendar Year 2023	
Total BioCO ₂	67 tCO ₂ e
Total Emissions (tCO ₂ e)	4142 tCO ₂ e
Total Offsets (tCO ₂ e)	3238 tCO ₂ e
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offset Adjustment (tCO ₂ e)	0 tCO ₂ e
Grand Total Offsets for the 2023 Reporting Year	
Grand Total Offsets (tCO ₂ e) to be Retired for 2023 Reporting Year	3238 tCO ₂ e
Offset Investment (\$25 per tCO ₂ e)	3238x \$25 = \$80,950

Retirement of Offsets

In accordance with the requirements of the *Climate Change Accountability Act* and Carbon Neutral Government Regulation, *the Abbotsford School District – SD34 (the Organization)* is responsible for arranging for the retirement of the offsets obligation reported above for the 2023 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 Organization's 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.

Climate Change Risk Management

This section provides a brief overview of the District's climate change impacts and risk management initiatives for 2023.

Based on a high-level climate hazard assessment conducted by the District several years ago and climate hazard impacts experienced by in recent years, the District has begun looking at ways to adapt to current and future climate hazards. The District has also added an explicit climate change hazard metric to its annual risk registry for facilities and operations.

Thus far, the District has been most impacted by and has begun working towards adapting to two main hazards, namely, rising temperatures and extreme rain events. This section summarizes the impacts experienced in 2023 and the planned or implemented adaptation measures for these two hazard categories.

Climate Change Impacts and Adaptation Measures by Hazard Category



Rising annual temperatures and more frequent extreme heat events

2023 Impacts

No significant impacts from extreme heat events were recorded in 2023. However, climate hazard projections for the area as well as anecdotal data from past school years indicates there may be an increased need for cooling at some sites as local temperatures begin to rise, particularly in the months of June to September.



Flooding from prolonged or extreme rain events

2023 Impacts

No significant impacts from extreme rain events or overland flooding were recorded in 2023. However, floodplain mapping for the City of Abbotsford shows that several schools are located in floodplain regions indicating that there may be a need to increase their resilience to inundation in the future.

2023 Adaptation Measures Implemented

	Hazard Type	Measure Type	Site	Adaptation Measure Description
Actions Taken	Extreme heat events & rising temperatures	Mechanical	Terry Fox Elementary	<ul style="list-style-type: none"> Cooling tower upgrade + DDC controls upgrade

2024 Adaptation Measures Planned

Actions Planned	Hazard Type		Site	Adaptation Measure Description
	Extreme heat events & rising temperatures	Mechanical	Rick Hansen Secondary	<ul style="list-style-type: none"> Chiller upgrade + DDC controls upgrade and installation of VFDs

Other Sustainability Initiatives



Waste reduction

The District has an established waste diversion system in place which facilitates the sorting of waste from recycling and compostables at all facilities. Some sites also have additional recycling collection initiatives in place to collect items such as batteries, used pens and markers, or soft plastics (all of which cannot currently be placed in mixed recycling bins) and bring them to local recycling facilities.



Green Procurement

The District purchasing department has instituted a buy local purchasing initiative and strives to purchase supplies and materials within a 100km radius whenever possible.

Executive sign-off

May 31, 2024

Signature

Date

Ray Velestuk

Secretary-Treasurer/CFO

Name (please print)

Title

Please scan and email the completed form to Carbon.Neutral@gov.bc.ca