



ABBOTSFORD
SCHOOL DISTRICT
RESPECT OPPORTUNITY INNOVATION

2020

PSO Climate Change Accountability Report

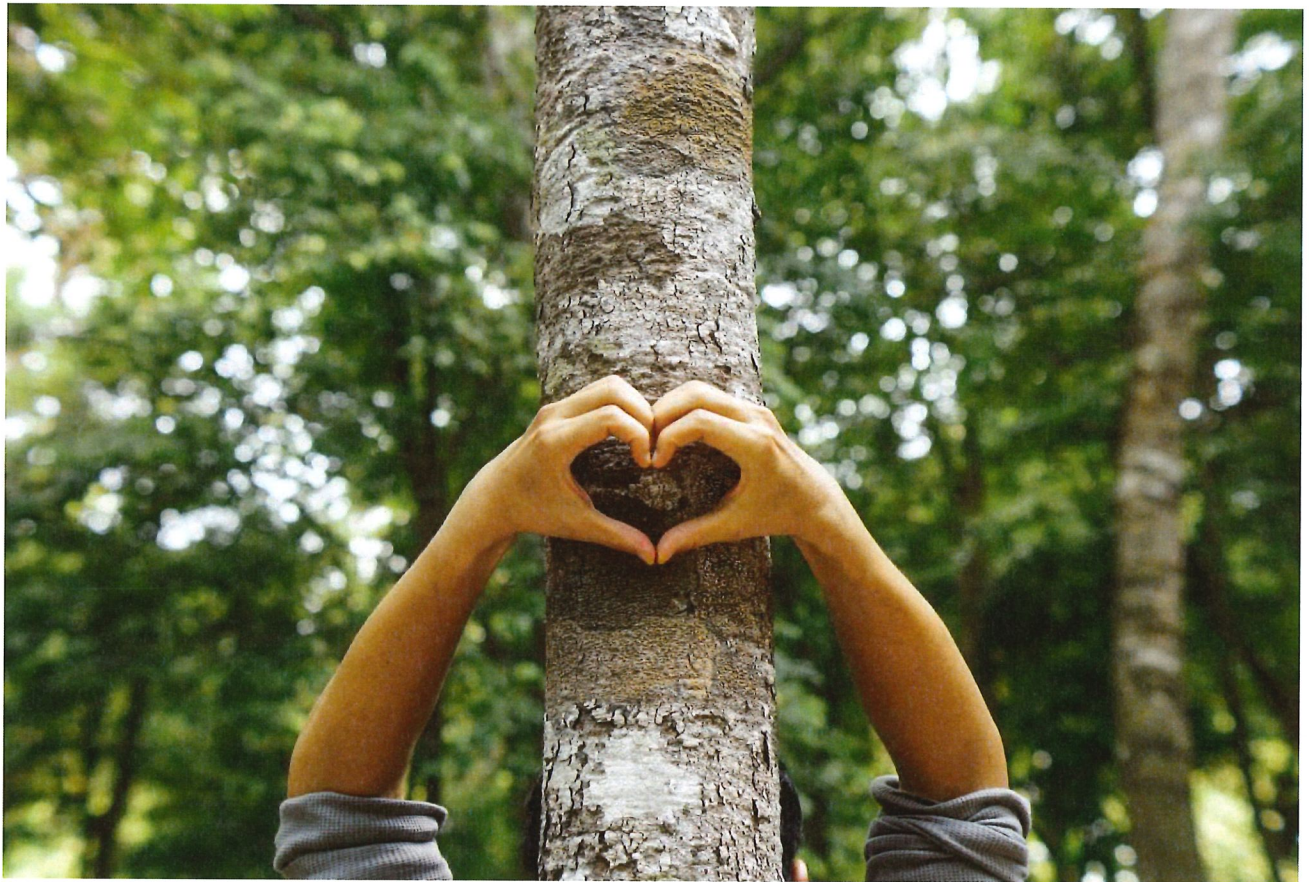


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Declaration statement

This Climate Change Accountability Report for the period January 1, 2020 to December 31, 2020 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2020 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2021 and beyond.

Executive Summary

The Abbotsford School District has made a firm commitment to reducing its energy consumption and its greenhouse gas emissions (GHG's). This is made evident by the fact that the district began its GHG reduction efforts back in 2001 nearly 10 years before GHG reporting truly began. By 2010 the district had already reduced its natural gas and electrical consumption by over 30% each. Both energy consumption and GHG emissions have continued to decrease in the years since.

Currently the Abbotsford School District ranks as one of the lowest producers of GHG emissions in the province compared to other school districts on a GHG per student basis. Every year the district invests in GHG reduction initiatives and those investments have paid off by reducing the Abbotsford School District's GHG emissions in all three focus areas, paper, buildings, and fleet. 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 its carbon neutrality each year.

In 2020, the district continued to reduce its building energy consumption by completing LED lighting upgrades at several sites including networked lighting controls pilot projects at two sites. Several mechanical upgrades were also completed to upgrade mechanical equipment like boilers, water heaters and furnaces to high efficiency units. The district made progress with regards to the other two GHG reduction focus area as well. To reduce paper consumption, the district began implementing PaperCut print management software. This initiative is expected to reduce abandoned printing (print jobs that are printed but never picked up) by 20-30% thereby reducing paper waste throughout the district. The district also continued to lay the groundwork for future GHG reductions to the fleet by adding more electric vehicle charging stations to its electric vehicle charging network and by conducting market research related to electric and alternative fuel buses.

In response to a high-level climate change hazard assessment completed two years ago, the district has begun looking at ways to deliver ventilation and cooling to portables and buildings which were not previously equipped to do so. These measures are being undertaken to help ensure that the district can continue to provide safe, healthy learning environments despite increasing global temperatures. In 2020 one major and two minor ventilation projects were completed to help reduce the risks posed by extreme temperatures and COVID-19. In 2021 the district will begin a more detailed climate hazard assessment to identify site level climate change related hazards and suggest potential measures for reducing risk while continuing to reduce the GHG emissions which are the root cause of climate change. This assessment will help the district to chart a path towards a more resilient low carbon future.

2020 Greenhouse Gas Emissions overview

Current State of the inventory

As of 2020, the Abbotsford School District had reduced its GHG emission by 20% in terms of absolute emissions and 26% in terms of weather normalized GHG emissions (Figure 1) which falls 13% short of the district's target of a 33% reduction in absolute emissions below 2010 levels by 2025. The projects undertaken in 2020 and those planned for 2021 and beyond are geared towards continuing to reduce GHG emissions every year while upholding the school district's strategic focus on 4 key pillars - Student Success, Optimized Resources, Engaging Opportunities and Progressive Workforce.

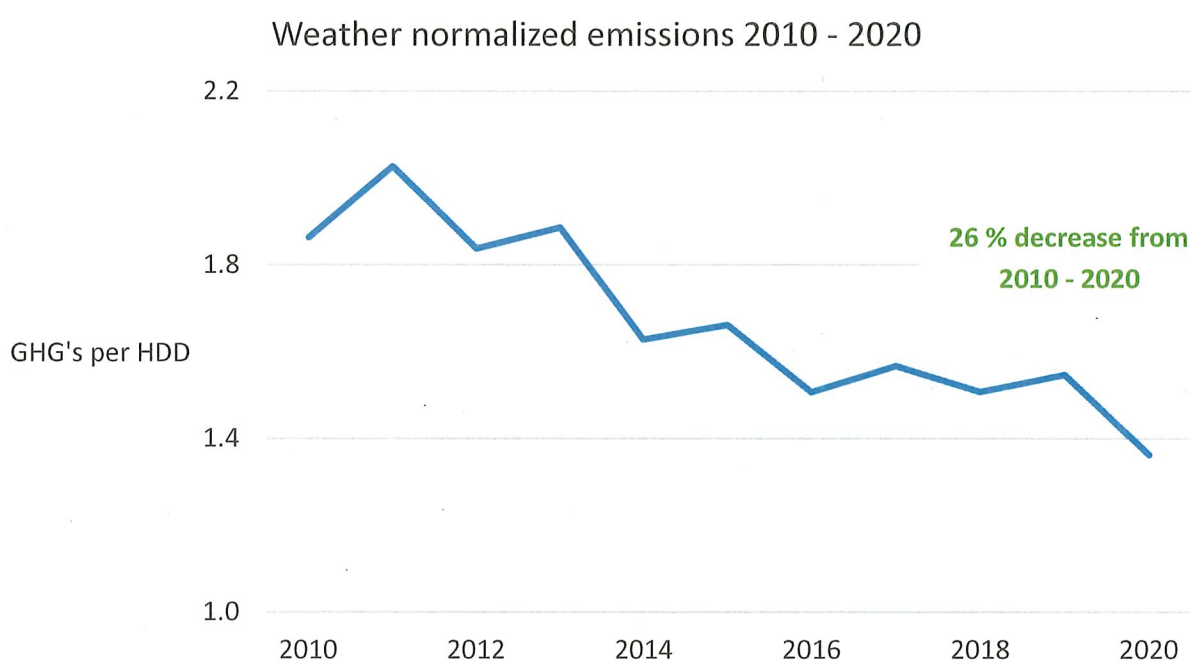


Figure 1. Weather normalized GHG emissions (tCo2e) from 2010 -2020

GHG emissions by source

Buildings

The biggest source of GHG emissions in the district comes 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.

Fleet

The second highest source of GHG emissions in the district is vehicles. The district owns and operates a fleet of buses for student transportation as well as service and administrative vehicles.

Paper

GHG emissions from paper are the smallest source of emissions in the district. Schools are the largest consumer of paper products in the district with the remainder being used by school district administration and support services.

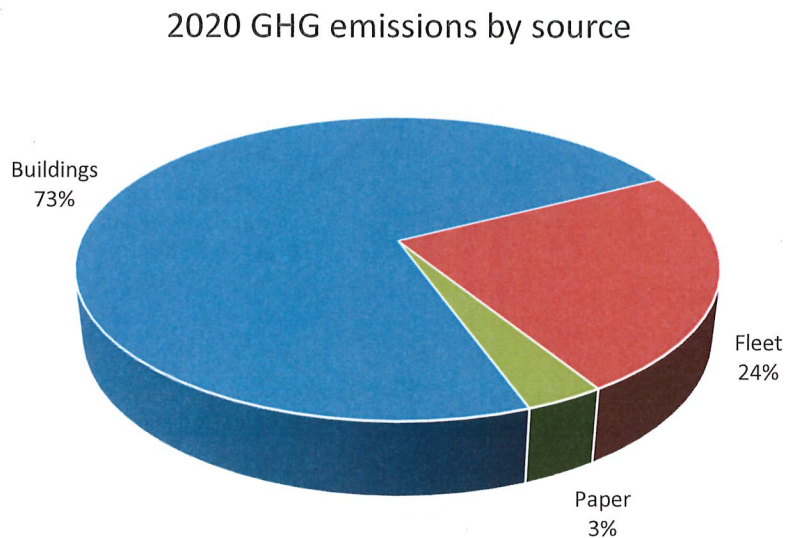


Figure 2. Breakdown of GHG emissions by source in 2020

How do we compare?

As of 2019, the Abbotsford School district was the fourth lowest emitter in the province in terms of GHG emissions per student (Figure 3). Its GHG emissions were less than half the provincial average and fell approximately 15% below the Fraser Valley and Great Vancouver Regional District (FVRD&GVRD) Average as well. Between 2010 – 2019 the Abbotsford School District's weather normalized emissions fell by 17% which is less than the provincial average reduction of 19% (Figure 4) but more than the Fraser Valley and Great Vancouver Regional District Average of 13%.

GHG Emissions per student in 2019

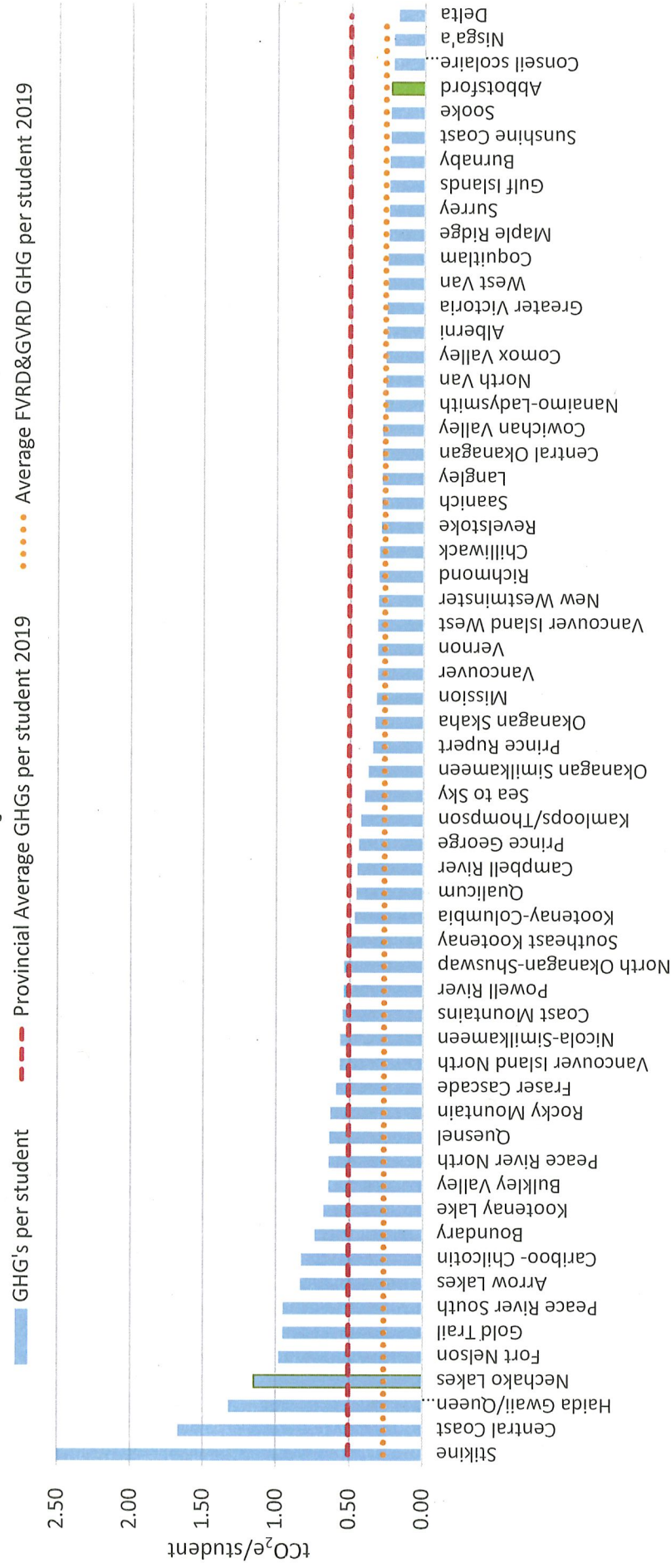


Figure 3. 2019 GHG emissions in tCO₂e per student

Data Source: This graph was generated using data from CleanBC's 2019 Carbon Neutral Government Year in Review: Summary

Percentage change in weather normalized emissions 2010 - 2019

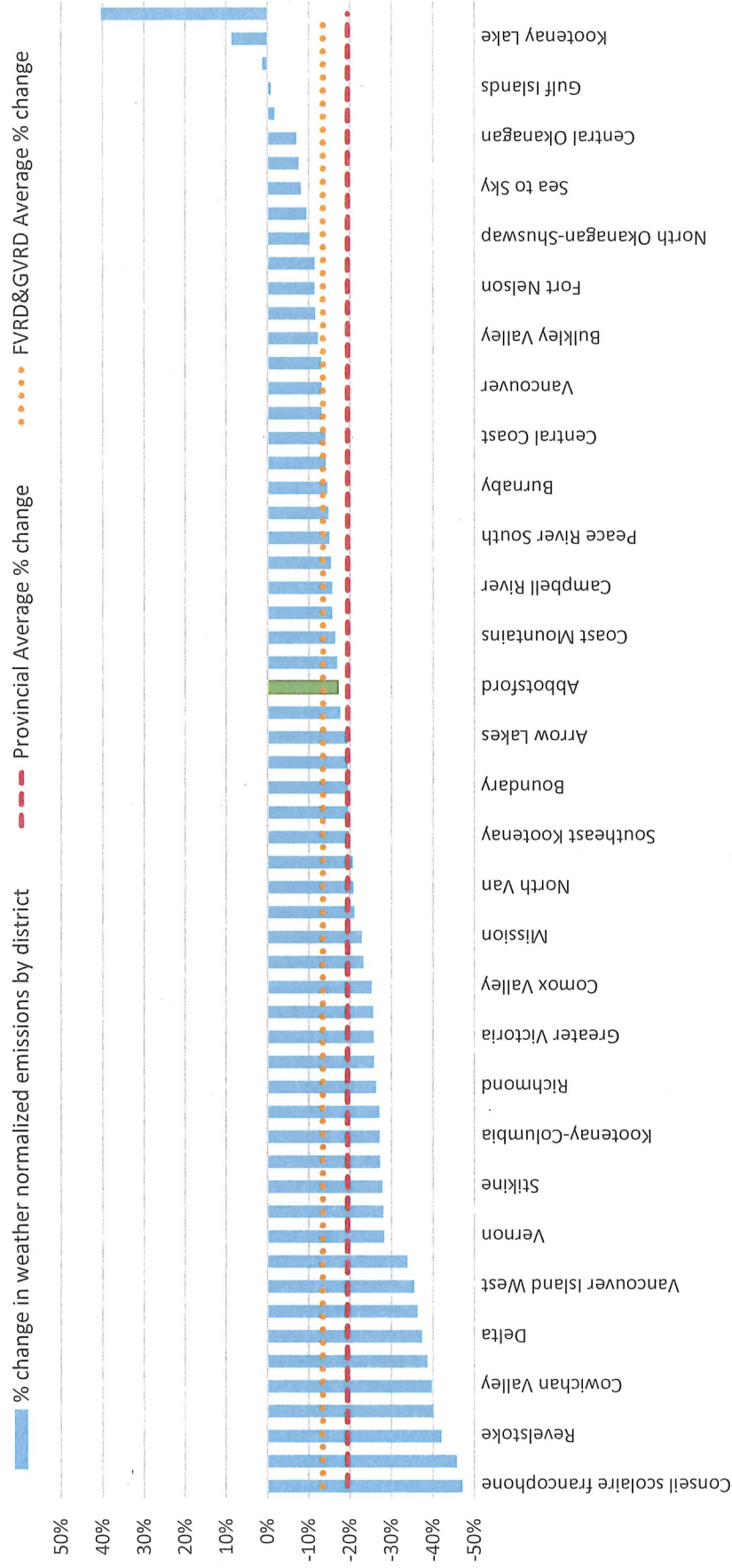


Figure 4. 2019 GHG percentage change in weather normalized GHG emissions

Data Sources: This graph was generated using data from CleanBC's 2019 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 5, 2021

Historic Actions Taken to Reduce Greenhouse Gas Emissions

Electricity and Natural Gas Consumption

Abbotsford School District's journey to reduce greenhouse gas emissions began back 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 5a & 5b*) 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 steadily decrease its building energy use reducing electricity consumption by an additional 25% and natural gas consumption by an additional 23% as of 2020. This results in a total electricity reduction of 52% and a total natural gas reduction of 47% since energy conservation efforts began in 2001.

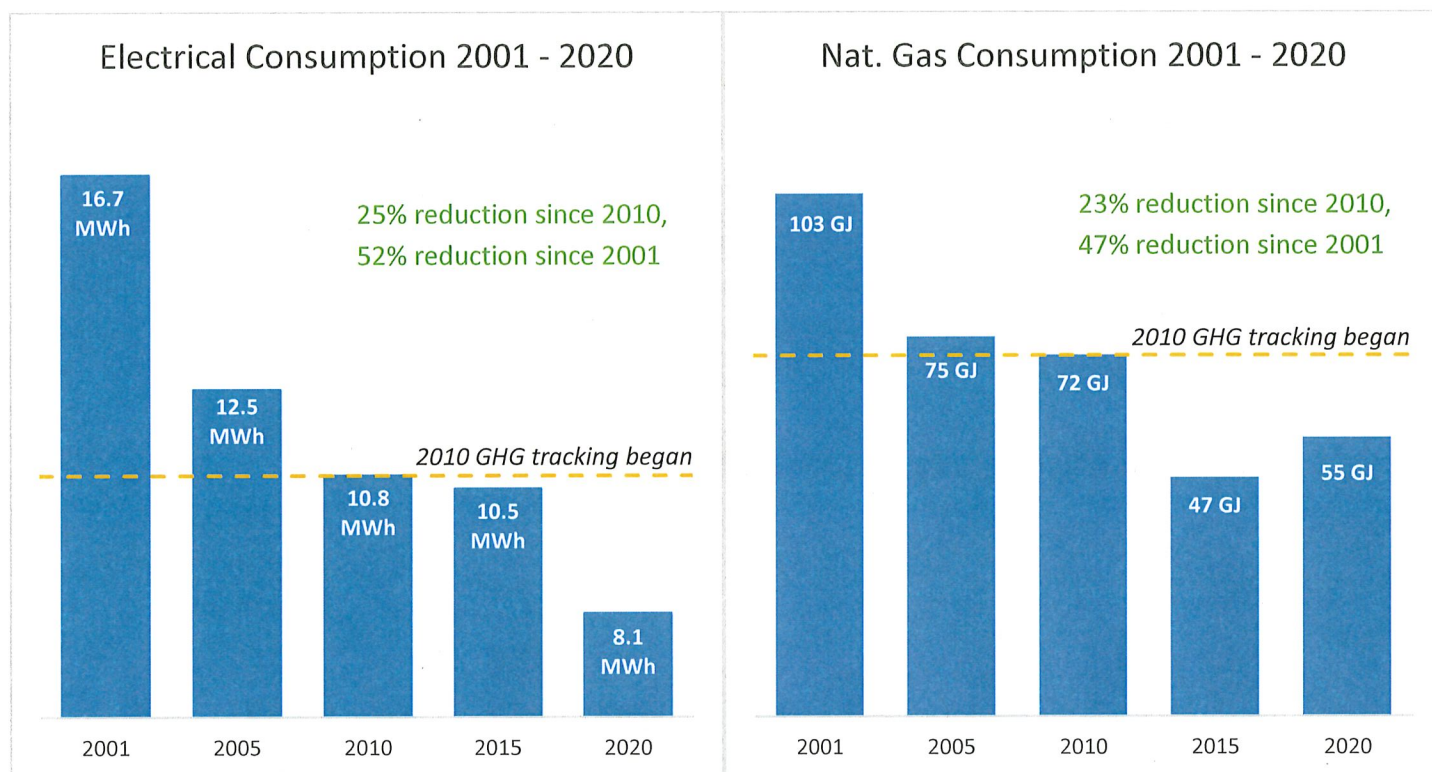


Figure 5a – Historic Electricity Consumption Reductions, Figure 5b - Historic Natural Gas Consumption Reductions

Energy conservation efforts were hampered somewhat in 2020 due to COVID-19. The increased indoor airflow requirements implemented to help reduce the risk of COVID-19 transmission in schools increased both electricity and natural gas usage for building heating and cooling. On the flipside, the elimination of afterhours rentals and the remote instruction protocols implemented at the middle and secondary schools reduced electricity consumption at these sites resulting in a 14% decrease in electricity consumption overall and a 4% increase in natural gas consumption between 2019-2020.

Fleet Vehicles

In recent years the district has begun replacing some of its fleet vehicles with zero emission vehicles to reduce GHG emissions in this category. The district has also begun installing electric vehicle charging stations at select sites to provide a charging network for electric fleet vehicles and to support staff who are making the switch to zero emission vehicles for personal use.



Paper

The district has undertaken numerous paper reduction initiatives in recent years. 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.

Cost Savings from GHG reductions

The district's GHG mitigation efforts have had the co-benefit of decreasing operating costs and reducing the amount of carbon offsets the district must invest in each year. Electricity and natural gas conservation efforts since 2010 resulted in avoided costs of approximately \$510,000 in utility charges in 2020. The amount that the district must invest in carbon offsets has also been decreasing since 2011 resulting in an additional \$42,700 of avoid carbon offset costs.

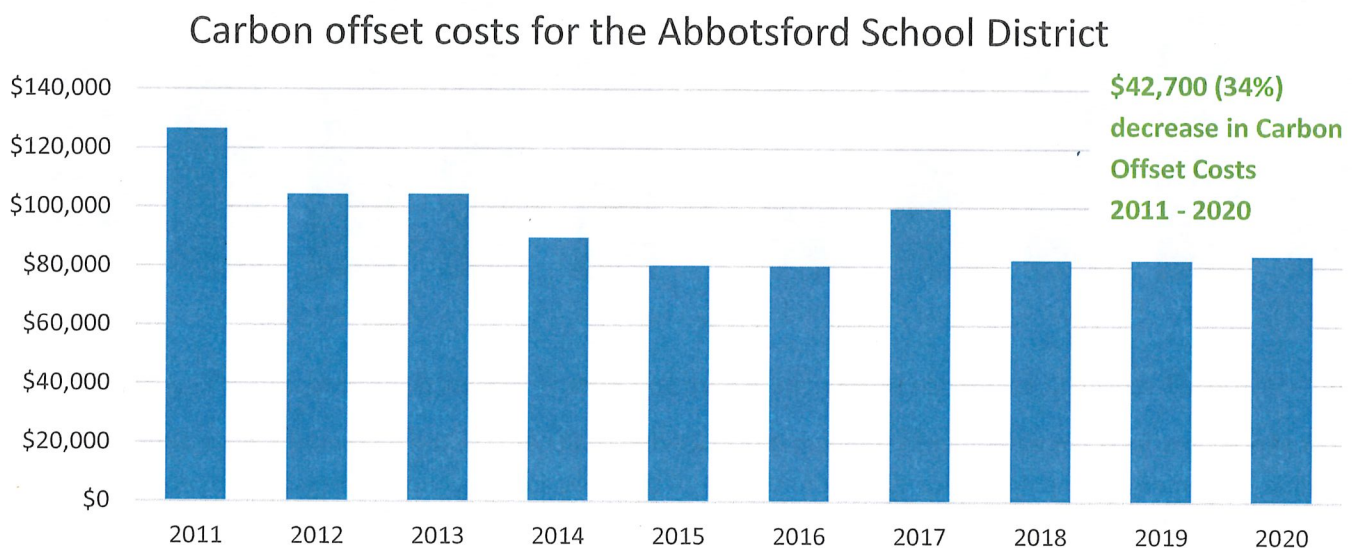


Figure 6. Falling carbon offset costs between 2011 - 2020 due to GHG emission reduction efforts

Actions Taken to Reduce Greenhouse Gas Emissions in 2020

Key Projects:

Lighting

- Phase 2 of a site-wide LED lighting upgrade (including networked lighting controls) completed at the Facilities and Maintenance Yard.
 - The projected savings for the LED lighting upgrade portion of this project are 35,000 kWh of electricity which is equivalent to a 315 tonne/yr¹ reduction in CO₂
 - Networked Lighting Controls expected to generate additional electrical & GHG savings
- Phase 1 of a site-wide LED lighting upgrade (including networked lighting controls) completed at Rick Hansen Secondary School
 - The projected savings for the LED lighting and controls upgrade at this site are 150,00kWh/yr
- Small Scale LED lighting upgrades at 6 sites

Mechanical

- Boiler upgrades at 2 sites
 - Barrowtown Elementary
 - Chief Dan George Middle School
- Furnace upgrades in select portables at 8 different sites
- Domestic Hot Water Heater upgrades at 5 sites

Building Envelope Upgrade

- Margaret Stenersen Elementary (approx. 35% of the school)

EV infrastructure

- 8 - level 2 charging stations were added to the district's electric vehicle charging infrastructure. (2 heads each at 4 sites)

Paper Reduction

- Introduction of PaperCut print management software. This initiative is expected to reduce abandoned printing (print jobs that are printed but never picked up) by 20-30%

¹ Calculated at 9 tCO₂e/GWh as per BC Hydro's greenhouse gas intensities 2015 as found on their website: https://www.bchydro.com/about/sustainability/climate_action/greenhouse_gases.html

GHG Reduction Actions Planned for 2021

To continue reducing its GHG emissions the district is planning to complete the following projects in 2021:

Lighting

- Abbotsford Traditional Secondary School Hallway/classrooms etc. upgrade to LED during the seismic upgrade project happening at this site
- Rick Hansen Phase 2 - LED lighting upgrade +networked lighting controls pilot
- Small Scale LED lighting upgrades at 6 sites

Mechanical

- Abbotsford Traditional Secondary School new high efficiency boilers and unit ventilators will replace the old lower efficiency units. This project will be undertaken in conjunction with the seismic upgrade happening at this site.
- Furnace upgrades in portables at 6 sites

Building Envelope Upgrades

- Abbotsford Traditional Secondary School
- Ten Broeck Elementary
- Bradner Elementary

New building

- Eagle Mountain Elementary

EV Infrastructure

- 8 - level 2 charging stations will be added (2 heads each at 4 sites)

Paper Reduction

- All printers and photocopiers replaced this year will be outfitted with PaperCut print management software and tied into the district's network of printers and photocopiers.

Climate Change Risk Reduction / Climate Change Adaptation

In response to the high-level climate hazard assessment conducted by the district 2 years ago, the district has begun looking at ways to cool or at least ventilate buildings and portables which, to date, did not have that capacity. To this end, standalone air conditioning units have been added to many of the portables. In 2020, the school district

- Added a ventilation system to South Poplar elementary to supply heated and cooled outside air to all classrooms and the library.
- Added mechanical ventilation to Godson Elementary & Aberdeen Elementary (5 classrooms per site). This was in response to COVID-19 ventilation requirements and as a climate change adaptation measure to mitigate extreme heat hazards.

In 2021, the school district will also be conducting significant repairs to the School Board Office cooling tower as a preventative measure to reduce the hazard of extreme heat events.

Also in 2021, the district will be undertaking a site-by-site climate change hazard assessment and will come up with a list of prioritized climate adaptation and climate change mitigation measures to help guide the district going forward.


Emissions and Offset Summary Table:

<i>Abbotsford School District 2020 GHG Emissions and Offsets</i>	
GHG Emissions created in Calendar Year 2020	
Total Emissions (tCO ₂ e)	3,854
Total BioCO ₂	24.1 + 12.2 = 36.3
Total Offsets (tCO ₂ e)	3,310
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offset Adjustment (tCO ₂ e)	45
Grand Total Offsets for the 2016 Reporting Year	
Grand Total Offsets (tCO ₂ e) to be Retired for 2020 Reporting Year	3310 + 45 = 3355
Offset Investment (\$25 per tCO ₂ e) 3,309 tCO ₂ e x \$25/tCO ₂ e	\$83,875

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 2020 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.

Executive sign-off: *[To be signed by a senior official, such as CEO, COO or Superintendent]*

 _____ Signature	28/05/2021 _____ Date
Ray Velestuk _____ Name (please print)	Secretary-Treasurer/CFO _____ Title

Please scan and email the completed form to Carbon.Neutral@gov.bc.ca 13