2023 Climate Change Accountability Report

Greater VICTORIA School District — One Learning Community

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Declaration Statement:

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

By June 30, 2024 the Greater Victoria School District 61 final 2023 Climate Change Accountability Report will be posted to our website at https://www.sd61.bc.ca/news-events/climate-action-initiatives/

Executive Summary

On behalf of the Greater Victoria School District, we are pleased to submit our Carbon Change Accountability Report for 2023.

Our Vision:

This report reflects on our efforts to reduce the our emissions. It looks at our progress as well forecasts where we are headed. It discusses current actions and planned actions in an attempt to create a clear and reasonable path for meeting our climate goals

Our Goals for 2030:

Our goals as an organization closely align with the goals of the province which are derived from the IPCC recommendations for limiting global warming to 1.5 degrees C.

- **50% decrease in building emissions from 2010 levels**
- **40% decrease in fleet emissions from 2010 levels**

2023 Results:

Measured GHG emission levels in 2023 showed a:

- 5.7% decrease in emission levels from 2022
- 12.5% forecasted decrease over the 2023/24 school year
- 6.6% decrease in fleet emissions
- 17% decrease in emissions from paper

In 2023, we witnessed a sharp turn around for GHG emission levels by May 2023. This is an indication that efforts to reduce GHGs have finally caught up to increased district-wide ventilation that was added during the COVID pandemic. The weather in 2023 also had a relatively positive impact on building heating demands as well.

Our board remains committed to the further reduction of greenhouse gases and recognizes the climate emergency we all face.

2023 Highlights:

This year was highlighted by the completion of several highly impactful projects that will continue to positively affect emission levels going forward. The immediate impact of projects were previously overshadowed by the results of COVID ventilation, but have begun to show results part way through 2023 and into 2024.

2023 GHG savings and energy efficiency projects are highlighted by:

- LED lighting and controls upgrades
  - 6 schools in 2023
  - 44 buildings since 2019.
  - Over 3,000,000 kWh annual savings in electricity
- Continuous Optimization Program:
  - Sir James Douglas Elementary
  - Central Middle School
  - Torquay Elementary
  - 81,667 kWh estimated savings in natural gas and electricity.
- Thermostat upgrades - 20 locations
- Building controls upgrades at Doncaster Elementary
- All new stand-alone child care studios continue to be built with
  - All electric heating.
  - Meet or exceed NEBC requirements
- 11 new heat pumps added to existing childcare facilities
- First full year of electric bus operation
- Our first 3 electric fleet vehicles are now in service
- Reynolds boilers received high efficiency replacement
- Supporting EV charging infrastructure expanded with 3 new chargers
- Light Switch Stickers campaign
- Climate Pledge Tree pilot project
- Paper Purchasing Scorecards

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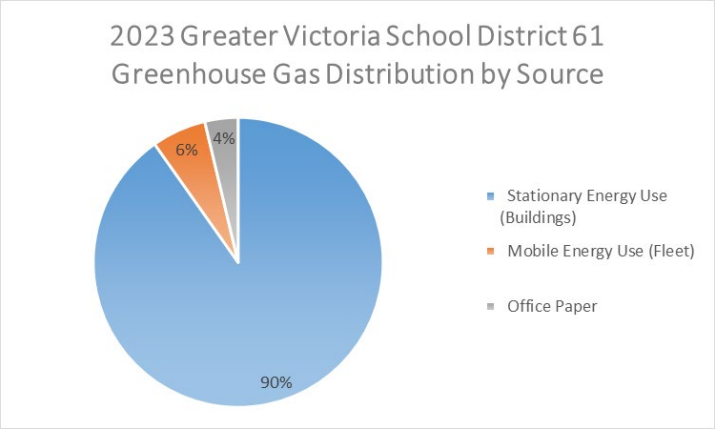
Greenhouse Gas Emissions

Distribution:



The primary source for greenhouse gas emissions within the district has always been from buildings. Heating of our buildings is necessary for the majority of the school year. It accounts for the bulk of our energy use and total building emissions. How we heat our buildings presents the largest opportunity for reducing our carbon footprint.

Heating system upgrades, and improvements to mechanical systems remain at the forefront of our efforts to reduce overall emissions. High initial investment costs and simultaneous improvements to air quality by providing more air changers per hour can make the process challenging for older buildings.

All new buildings since Oak Bay community secondary school (2014), all childcare studio additions and all upcoming builds including Cedar Hill Middle School use electricity as their primary heat source. This has allowed us to halt the growth of and further reduce our emissions as we expand our building portfolio.

Programs that create behavioral change, awareness, and accountability will also be important as we continue to work towards achieving our goals. Unlike other mechanical improvements to buildings, these approaches can exist with very little capital investment and can even align with inclusive education.

We are always working to develop policies and programs that will foster participation from all staff and students. In 2023/24 we brought back our award winning “Light Switch Sticker” campaign, along with the introduction of Climate Pledge Tree and Shut Out the Cold campaigns. In 2024/25 we plan to bring back improved versions of all our campaigns and introduce a new “Sweater Day” campaign as well.

Mobile energy use and paper consumption accounted for just 10% of our emissions profile, but will not be ignored. In 2022 we promised to take measures to reduce paper consumption and delivered with a 17%

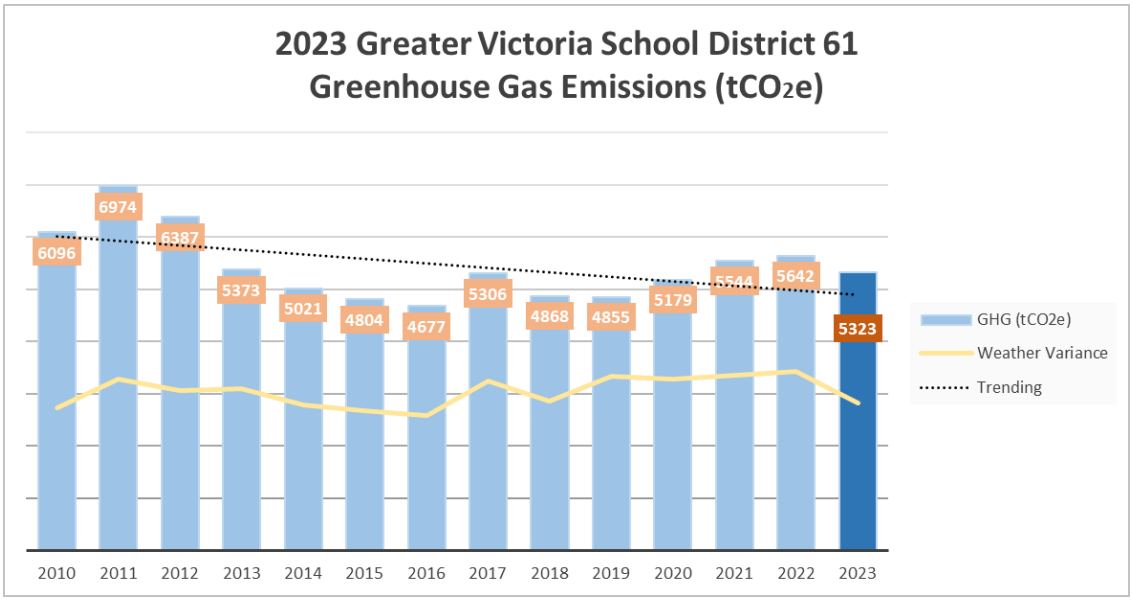
decrease equivalent to over 40 tonnes of CO2 emissions, Fuel consumption was also down 6.6% in 2023 through use of electric vehicles, more efficient operations, an improved preventative maintenance program.

Our goals:

At the Greater Victoria School district our goals for reduction of GHG emissions align with the goals of the province:

- 40% by 2030 (fleet)
- 50% by 2030 (buildings)

Current Progress:



The above chart shows combined greenhouse gas emissions generated by our district for each year since 2010.

There is a clear relationship between weather and the amount of GHG's created each year. This can be easily observed from the yellow line showing annual weather variance derived from the relative amount of heating degree days experienced each year using 15 °C as our average building's balance point.

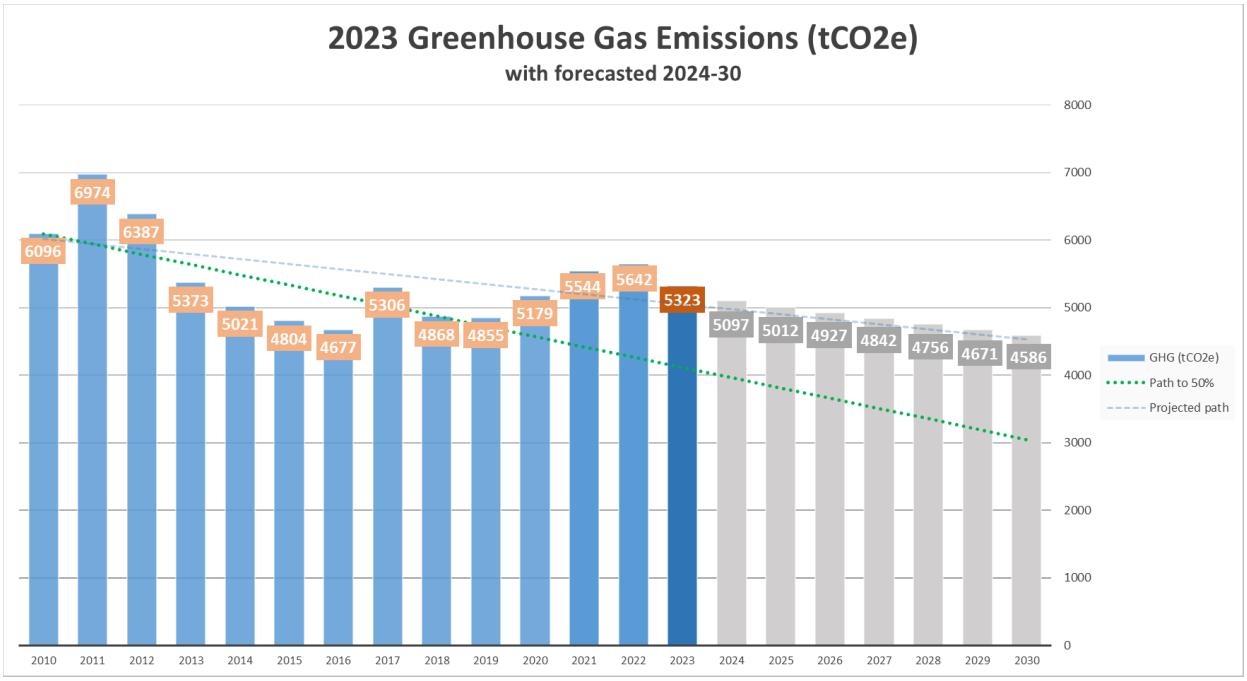
The trend-line (black) indicates the average trend from 2010 to 2023. The decreasing trend is the product of our efforts and investments since 2010. It represents green choices and an overall effort from everyone at the district.

There was also a significant bump created as COVID ventilation protocols were brought into place in 2020-2023. Spaces that previously lacked ventilation were corrected permanently and other spaces with

inadequate ventilation were improved upon. This meant increases to overall air changes per hour and much more outside air that needed to be heated to room temperature.

Halfway through 2023 our actions have begun to once again surpass the results of increased ventilation and we are seeing the beginnings of a return to our previous trend of emissions reduction. The calendar year of 2023 saw a 5.6% decrease in GHG emissions, however**,** the 2023/24 school year projects to be greater than a 12% decre**ase** as of March 2024**.**

Achieving our goals:



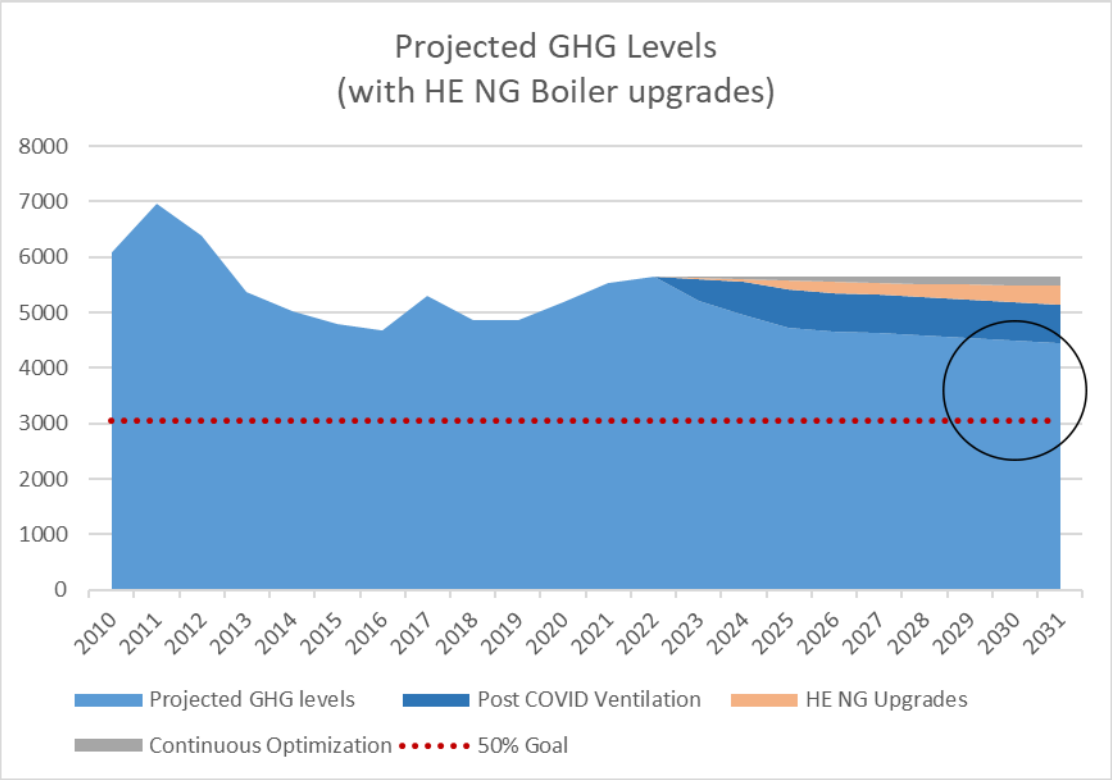
Looking ahead to 2030, we can see that COVID ventilation measures have recently taken us off pace to reach our 2030 goal. Our investments and efforts must now increase to keep up. We will need to embrace new technologies, and move forward with new funding for additional GHG reducing projects. We must continue to hold ourselves accountable for waste and educate each other on best practices in our everyday activities.

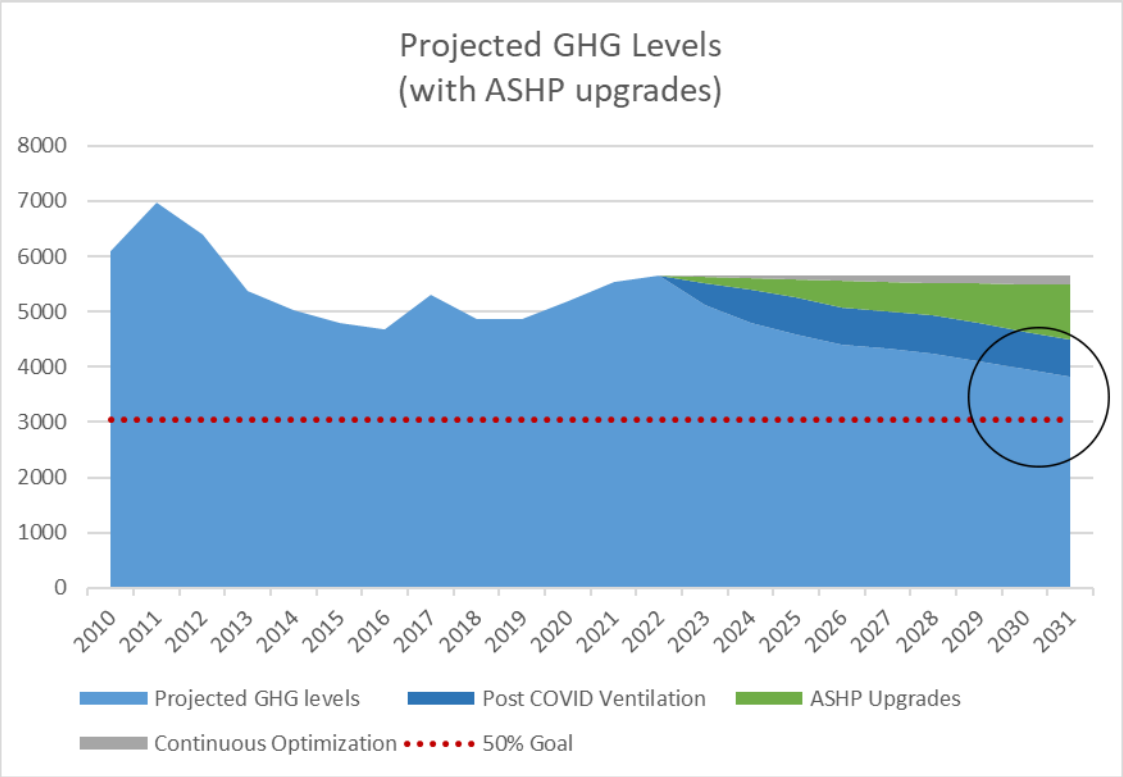
This type of chart must also be taken with a grain of salt in that it uses past performance to project future performance, We must consider that past performance will have included low hanging fruit, and relatively higher CNCP funding. The actual pathway to reach 50% reduction, would likely involve investments in

LCE (low carbon electrification) of heating plants, and introduction to HRV (heat recovery ventilation) on a large scale.

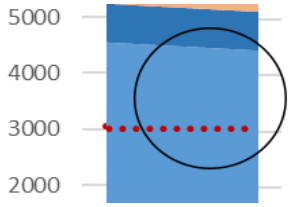
The following 2 charts take a more realistic view based on planned actions between the present and 2031.

These charts show 2 potential extreme paths regarding replacement of aging out heating plants, The first being all High Efficiency Natural Gas Condensing boilers (HE NG), and the second being 100% Air Source Heat Pumps (ASHP). In both cases we included actions taken through continuous optimization of buildings as well as a gradual, but not complete, return to using building mechanical systems to provide ventilation rather than windows and doors.



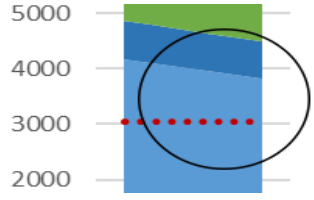


HE NG Boilers Pathway



- 1406 tCo2e reduction shortfall
- Estimated $6.275 M (present costs)
- 23% 2030 target shortfall
- Obsolete, or backup only by 2050

ASHP Upgrades Pathway



- 764 tCo2e reduction shortfall
- 13.5% 2030 target shortfall
- Estimated $8.5 M (present costs)
- Increased risk of compatibility
- Increased maintenance costs
- Improved climate change resilience

In both cases we find ourselves falling short of 2030 GHG reduction goals. Realistically the path taken will fall somewhere between both of these paths, dependent on available funding, and rebates, while considering the characteristics and timing for replacements in the individual buildings. The remaining gap can potentially be addressed through:

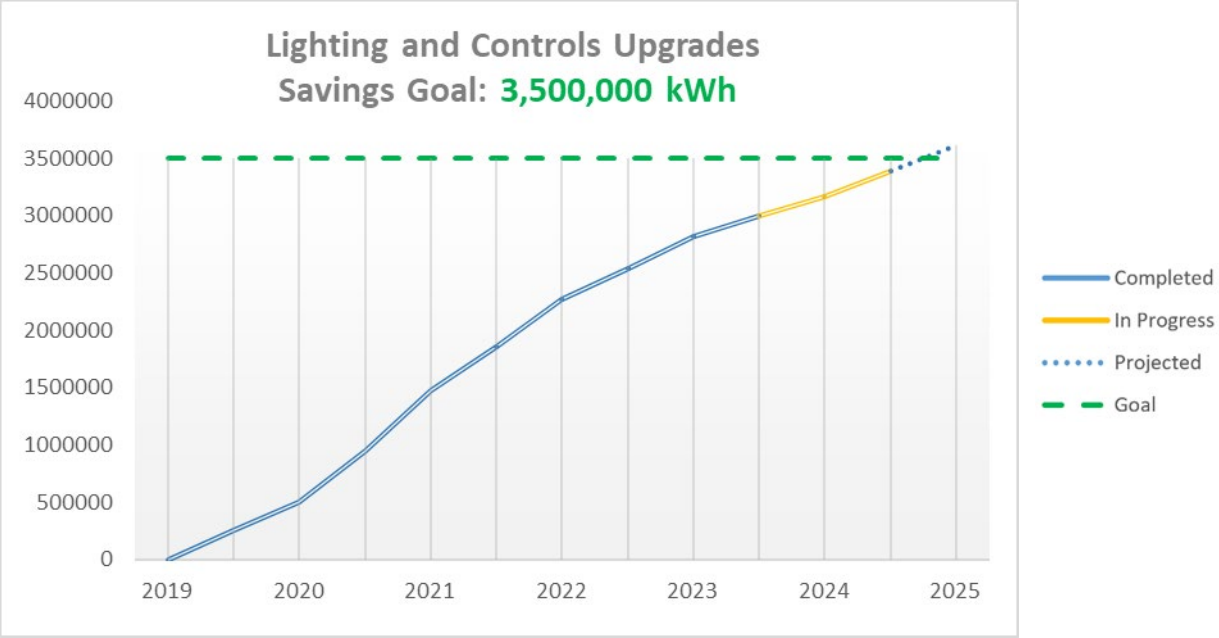
- Behaviour changes and education
- Heat recovery ventilation
- Building envelope improvements
- Renewable energy sources
- New potential technologies.

These projections were made for the previous year's report. So far, they are looking accurate for 2023 through 2024 and do not need to be updated at this time.

Actions Taken in 2023 to Reduce Emissions

LED Lighting and Controls Upgrade:

In 2023 we furthered our progress towards a complete changeover to LED lighting in the school district, and our goal of creating 3.5 GWh annual savings in electricity. Even though electricity in BC is nearly 100% clean, we understand that the North American electrical grid is still close to 60% derived from fossil fuels. Our savings in electricity make available more clean electricity for our neighbors in Alberta, and Washington in the short term. In the longer term, these efforts will help to increase the available electrical capacity of our buildings to facilitate future low carbon electrification and potentially avoid major infrastructure upgrades as a result.



LED lighting projects in 2023 created an estimated 347,000 kWh in annual savings toward our goal. Projects scheduled for 2024 are estimated to add another 340,000 kWh and should put us very close to our goal.

Continuous Optimization and DDC Upgrades:

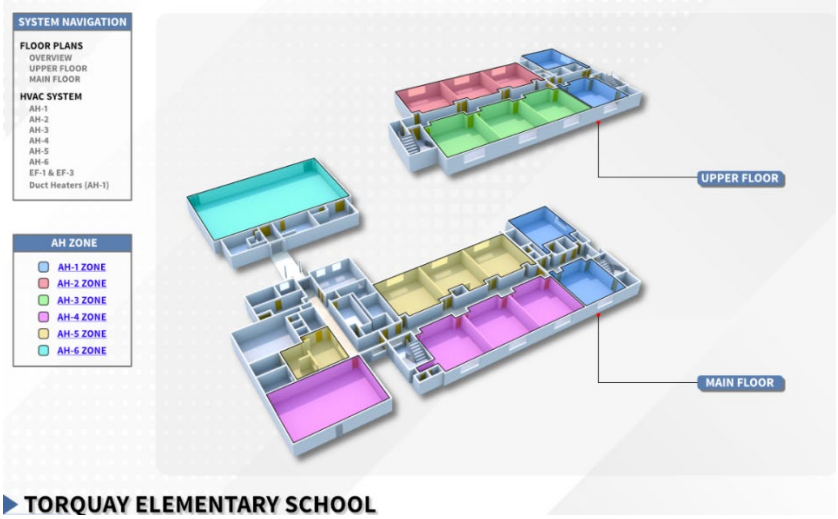
Plans were put in place in 2022 to enter into the BC Hydro Continuous Optimization program. In 2023 we completed our first 3 buildings under the program.

Investigations created recommended improvements across all three buildings. We then acted on the recommendations to create 81,667 kWh annual savings in naturals gas and electricity combined based on consultant estimates.

These actions also helped to inform us of other potentials savings across the entire district.

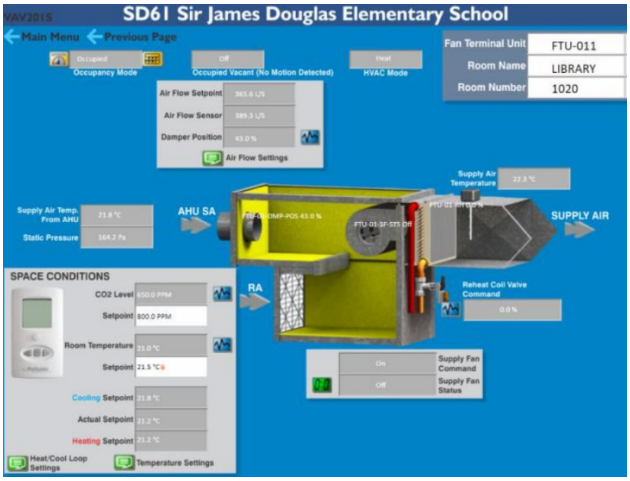
2022/23 Buildings:

- Torquay Elementary
- Central Middle School
- Sir James Douglas Elementary



The continuous optimization program or COP, investigates buildings through DDC to identify opportunities.

This investigation is heavily incentivized under the condition that certain low cost recommendations will be followed through with.



We will be looking to build off our success with another 5-6 buildings in 2024/25 with expected savings of over 150,000 kWh annually.

Energy Efficient and Low Carbon Childcare Studios:

The district is currently engaged in creating new child care studios at multiple sites throughout the district. In the case of all of these new standalone structures, we can proudly say that none consume fossil fuels. All of these structures are heated with electricity.

All stand-alone studios will continue to be built this way to ensure that we are no longer adding new sources of building emissions.

New studios will include heat pumps to help further our climate resiliency against extreme heat due to climate change.

New studio designs conform to the NEBC and migration towards the BC Energy Step Code is also under consideration moving forward. New buildings incorporate:

- Heat recovery ventilation
- Daylight harvesting
- LED Dimming
- Advanced controls using occupancy sensors

Electric Buses and Charging Infrastructure:

In the spring/summer of 2022, charging infrastructure was put in place at Colquitz Middle School to accommodate 4 electric buses. These buses arrived in September and were immediately put into service.

2023 was the first full year of operation for all 4 buses. They now facilitate the majority of fields trips throughout the district and also generate carbon credits for the district.

In 2023 our buses travelled 44,793 km and saved 67.1 tCO_2e when compared to their diesel bus equivalent.

EV Chargers and Zero Emissions Fleet:

In the summer of 2022 we were able to take advantage of one of Clean BCs most generous EV incentives to date. This rebate provided 75% of all costs, including infrastructure. Three charging stations along with electrical infrastructure were put in place at fleet parking.

In 2023 our first 3 zero emission vehicles were added to our fleet. These vehicles primarily serve to replace trips that would otherwise be made by internal combustion vehicles that might be oversized when the sole purpose is transportation of passengers .

In late 2023 we started work to double the capacity of our fleet charging by adding another 3 charging stations. Once again taking advantage of provincial rebates.

These six EV chargers will serve our first 15 to 20 light duty zero emission vehicles. This is the first step towards our goal of a 40% reduction in vehicle emissions by 2030. These chargers should be able to facilitate a 15% drop in fleet emissions once they are in full use.

These new vehicles and charging infrastructure along with new improvements in preventative maintenance contributed to a 6.6% reduction in fleet emissions in 2023 from the previous year.

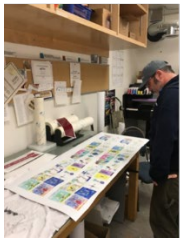
Learning Engagement: Light switch Stickers:

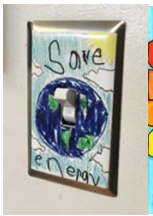
Following up on the success of our 2022 version of this campaign, we were back with our popular light switch stickers. We once again offered elementary students the opportunity to take part in climate action in a fun, engaging, and educational way.

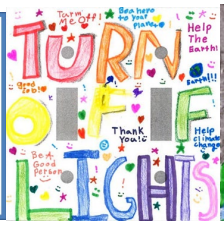
Each student was given a template in which to design their own light switcher sticker. The design was their idea of what would serve as a good reminder of when to turn off the lights, but the message could be anything relating to climate action as well. The templates were digitized and processed into each students very own sticker.

This year we were able to expand the campaign to also involve K-1 students with the addition of a new colouring template.

This program will return in 2024 with a few new improvements and we will look to involve middle and secondary school art and environmental classes as well.







Learning Engagement: Climate Pledge Trees:

We introduced a pilot campaign in 2023 with the help of the Maple Ridge – Pitt Meadows School District #42

Eight elementary schools received a climate pledge tree in their hallway. Students were able to write their pledges for the planet on their own leaves.

The science behind this campaign is based on a university study that found that when we write down our goals, we increase our chance of following through by 40%.

When we share our goals with others, these chances increases to 50%.

Learning Engagement: “Shut out the Cold” Doors Stickers :

Our official Energy Wise Network campaign in 2023 involved spreading awareness by placing the message directly where it could make an impact.

We also identified alignment between district security and safety of children and keeping doors closed to prevent the loss of energy through infiltration during the heating season.

The result reached over 250 doors and created a very visible difference to the amount of doors left open when unattended. Enough of a difference to place 2nd place in the category of most impactful at this year’s provincial Energy Wise summit.

Paper Purchasing Campaign :

In 2022 we had a significant jump in emissions due to paper consumption. Many other school district reported the same problem. Part of this unexpected increase was due to the lack of availability of 30% recycled content paper which had been popular in the past.

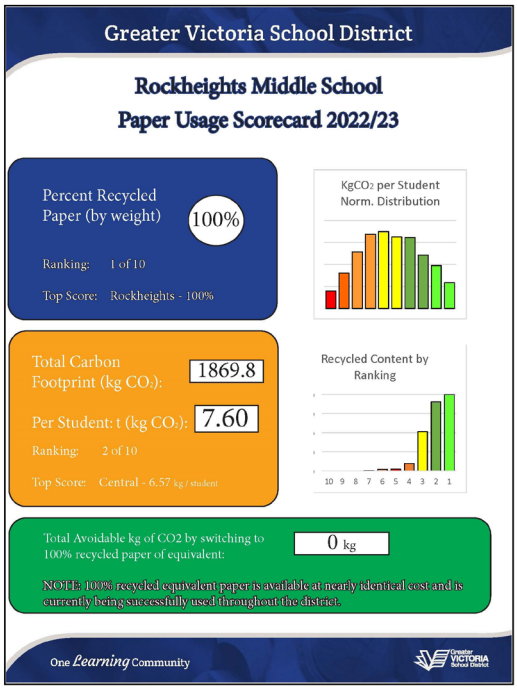
We promised to do our best to help fight these emissions in 2023/24 and this campaign was brought into existence.

We gather information on paper consumption for all paper users. This was typically grouped by schools or buildings.

We further broke the groups down by building type and developed a score card that summarized paper usage and quantified the opportunity for improvement. It also celebrated buildings that were already successful in mitigating emissions from paper.

In the summer of 2023 we engaged all groups and discussed opportunities and obstacles at the same time that we presented their scorecard.

We are happy to report that in 2023 we reduced our emissions from paper by 17%. This is equivalent to 40 tonnes of CO2 and is comparable to what we might expect from an expensive heating plant upgrade project.



Congratulations to Rockheights Middle School and their 100% use of recycled paper or equivalent in 2022/23.

Planned Actions in 2024 to Reduce Emissions

2024 should see a similar profile to 2023. There will be a continued focus on much of what was previously successful. We will increase programs relating to education and awareness. We will also begin to gradually shift emphasis from lighting upgrades to building controls.

2024 Highlights will include:

- LED Lighting and controls
    - **Targeting 340,000 kWh savings**
- Continuous Optimization
    - **Introducing 6 additional schools**
    - **Targeting 150,000 kWh savings**
- Doncaster DDC upgrades and unit ventilators
- Colquitz heating plant upgrade
- Behaviour change campaigns
    - **Light Switch Stickers Campaign**
    - **“Shut out the Cold” Campaign**
    - **Environmental Pledge Walls**
    - **“Space Heater Defeater”**
    - **Paper Procurement Awareness**
    - **Sweater Day (New to 2024)**
- Thermostat controls upgrades
- Building audits
- Real-time energy monitoring solutions
- Solar PV – Renewable generation

Long-term Plans for Reducing Emissions

Buildings

Heating and Ventilation:

With the vast majority of the district carbon footprint associated with maintaining building temperature and air quality, HVAC always be a prime focus. Unfortunately major upgrades are expensive and in most cases will only justify their costs when replacing equipment that is at or near end of life. The District is will continue to replace older heating plants with new technologies

15 heating plants have been identified as near end of life and are a high priority for replacement by 2030.

Building Envelope:

Window and roofing upgrades/repairs are ongoing throughout the district. Mount Douglas Secondary School's upgrade to energy efficient windows is now completed. Envelope upgrades at Lambrick Park Secondary School are in the planning stage.

Boiler Additives:

Pending a review of our existing pilot program, we will look to expand on the use of boiler additives to achieve better efficiency in our heating systems.

Re-commissioning and retro-commissioning of building systems:

Excellent incentive programs exist to investigate and correct issues that prevent buildings from operating the way they were intended. Other findings may bring to light opportunities to incorporate changes in original design that will further enhance performance of older buildings.

The school district is poised to take advantage of opportunities on an annual basis.

Photovoltaic Generation:

The business case for large scale photovoltaic systems on the rooftop of schools is beginning to make economic and environmental sense. Support for these projects is gaining ground through BC Hydro as well. As new technologies emerge and demand for clean electricity increases we will begin to take on more projects like the 2021 Torquay Elementary photovoltaic install.

LED Retrofits:

The district has been moving forwards with LED technology since May 2019, and plans to completely retrofit all buildings by the end of 2025. Electricity saved will help decrease infrastructure requirements towards electrification of buildings

Net-Zero Ready Building:

The new Cedar Hill Middle School is well underway. We are focusing on energy efficiency, conservation, and low carbon mechanical systems in order to produce our first net zero ready building. The new building will have the potential to eventually achieve net zero energy with the future expansion of its 100kW rooftop photo voltaic system. To further this initiative the Board of Education is committing $500K from its reserves to self-fund part of this initiative, and is outside the Ministry funding for a new build

Fleet

Electric Vehicles and Charging Infrastructure:

We have already completed in 2022

- 7 new electric charging stations for fleet vehicles and buses
- 4 new electric buses

In 2023/24 we added

- 3 new electric fleet vehicles
- 3 new EV chargers (in progress)

Supplies:

District policy already calls for the use of 100% recycled material when possible, however we still missed an opportunity with our paper consumption. In 2021 we created over 40 tCO2e from the times we used less than 100% recycled paper in our buildings.

Moving forward we will look to continue to raise awareness of this policy, and help our buildings to make the best choice when ordering supplies by engaging stakeholders.

Behavior Change:

Programs that create behavioral change, awareness, and accountability transcend all of the above categories. These approaches can exists with very little capital investment. This is why we are always working to develop policies and programs that will foster participation from all staff and students.

In 2024/25 we will again be participating in the Energy Wise Network with a program to raise awareness about energy use in our buildings with a Sweater Day celebration. The Sweater Day campaign will be piloted at Rogers Elementary. It will also look to go even further beyond education and awareness. The campaign is designed to inform us on how to improve comfort and reduce system temperature at the same time.

We will also be bringing back 5 other educational engagement campaigns. Each one with at least one improvement over its previous iteration.

Behavioral change will be critical towards eliminating the gap between 2030 goals and current projections.

Climate Risk Management

2021 and 2022 gave us some strong examples of what unprecedented climate change events can look like. More work needs to be done to fully understand the risks that these types of events represent to our buildings and occupants.

As a direct result of the record setting events of the 2021 summer “heat dome”, the district has moved to incorporate heat pumps into both existing and new construction child care portables.

These heat pumps will help provide a safe space for occupants during summer while decreasing winter energy demands and costs. They will also serve as a model for future projects.

Climate change is also increasing risk to trees, and associated falling hazards. The district is moving quickly to protect its trees by protecting and reinvigorating root compaction zones.

Emissions and Offsets Summary Table

***Greater Victoria School District 61* 2021 GHG Emissions and Offsets**	
GHG Emissions created in Calendar Year 2020	
Total Emissions (tCO_2e)	*5654*
Total $BioCO_2$	*10.9*
Total Offsets (tCO_2e)	*5323*
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO_2e)	*-1.97*
Grand Total Offsets for the 2020 Reporting Year	
Grand Total Offsets (tCO_2e) to be Retired for 2020 Reporting Year	*5321*
Offset Investment ($25 per tCO_2e) *[Grand Total Offsets to be Retired x $25/$tCO_2e$]*	*$133,025*

History of Greenhouse Gases and Offsets

Year	Totals	Emissions	Offsets Purchased
2010	6082	6096	$152,050
2011	6950	6974	$173,750
2012	6362 + 22	6387	$159,050
2013	5545 - 172	5373	$134,325
2014	5041-20	5021	$125,525
2015	4823-19	4804	$120,100
2016	4449+228	4677	$116,925
2017	5290+16	5306	$132,250
2018	4849 + 19	4868	$120,566
2019	4856	4856	$120,566*
2020	5178 + 6	5184	$129,600
2021	5544	5558	$138,600
2022	5642	5642	$141,050
2023	5323 - 1.97	5321	$133,025

* Offsets purchased for 2019 were based on 2018 to allow for COVID disruptions.

Retirement of Offsets:

In accordance with the requirements of the *Climate Change Accountability Act* and Carbon Neutral Government Regulation, *The Greater Victoria School District 61* **(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:

[All PSOs, including Small Emitters, must have their final report signed by a senior official, such as CEO, COO or Superintendent]

Deb Whitlen — Signature
May 31, 2024 — Date

Deb Whitlen — Name (please print)
Superintendent — Title

[Please email your signed report to Carbon.Neutral@gov.bc.ca by no later than May 31, 2024.]