Carbon Neutral

Nanaimo Ladysmith Public Schools
2023 PSO Climate Change Accountability Report

Title: 2023 PSO Climate Change Accountability Report

Organization: *Nanaimo Ladysmith Public Schools (NLPS – School District 68)*

PART 1. Legislative Reporting Requirements

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.

By June 30th, 2024, the 2023 Climate Change Accountability Report will be posted to www.sd68.bc.ca website.

Emission Reductions: Actions & Plans

A. Stationary Sources

In 2023, actions to reduce GHG emissions are:

- John Barsby – PHASE 2: Third end of life atmospheric boiler replaced with new condensing boiler. Also, replace all high-temperature heating coils to low temperature to take advantage of low-temperature boiler system. Completed December 2023. Estimated carbon savings of 17tCO2e.
- John Barsby – Building Automation upgrade to 50% of the school. Upgrading to a newer version increases capability to add more optimization programming which can lead to additional 5-10% annual gas savings. Estimated carbon savings of 5tCO2e.
- Ladysmith Secondary – upgraded ventilation systems to seven classrooms. Estimated carbon savings of 5tCO2e.
- Hammond Bay – Ventilation upgrades to new section of school. Added individual unit ventilators (UV) to each classroom which allows independent control of each unit. Once a space is unoccupied, the UV turns off and therefore, reduces gas usage versus a centralized system. Completed September 2023.
- Ladysmith Intermediate – Added Energy Recovery Ventilators to all classrooms which provide an additional 10% gas savings compared to non-energy recovery models.
- Brechin – Building Automation upgrade. Upgrading to a newer version increases capability to add more optimization programming which can lead to additional 5-10% annual gas savings. Estimated carbon savings of 3tCO2e.
- Continuous Optimization – Program to optimize building control automation systems to improve efficiency of HVAC energy-intensive systems. Investigation for first 13 sites (Group A) completed July 2023. Energy conservation measures to be implemented by September 2024 will generate gas savings of 2480 GJ and electrical savings of 112,000 kWh. Estimated carbon savings of 125tCO2e.

- Operational Monitoring – Energy Management team monitors all systems to ensure equipment and systems are running only when necessary to reduce the "waste". For example, heating systems are turned down or off during winter, spring, and summer breaks; boilers are turned off as soon as outdoor air temps are above 15C and a full walk-thru all sites first week of July to ensure all systems are *physically* off.
- The 9th year of the 'Energy Cup Challenge' completed another successful year. In partnership with Fortis and BC Hydro, competition amongst several schools to engage students in various energy conservation campaigns. Participating schools were recognized once again at "Energy Cup Banquet". Over 100 students attended. Prizes handed out at banquet as well as recognition message from Superintendent.

B. Stationary Sources – Looking Ahead

Our plans to continue reducing emissions in 2024 consist of:

- Update and replace building automation systems at three sites (in-progress – Cedar Secondary, Randerson Ridge and Bayview Elementary).
- Implement energy conservation measures identified thru Continuous Optimization Program for first 13 sites.
- Continue investigation phase of Continuous Optimization for balance of schools (26 sites) by December 2024 with anticipation for more energy conservation measures to be implemented for 13 sites. Remaining 13 sites implementation to follow 2025.
- Brechin Phase 2 - electrification measure to add ASHP to supplement boiler loop as primary source of heating and upgrade all heating coils to low-temperature coils. This will enhance savings from condensing boiler installed in Phase 1. Will also be able to provide some mechanical cooling. Expected completion July 2024. Estimated carbon savings of 20tCO2e.
- Quarterway Portables – updating existing electric heating and ventilation system to heat pump technology. No net GHG savings; however, heat pump system will be able to provide comfort cooling (climate adaptability).
- Synergistic HVAC upgrades – Energy Management team works closely with Capital planning team to ensure necessary HVAC upgrades align with seismic and/or new construction.
- GHG Reduction Strategy plan – a two-phased feasibility study (ASHRAE Level II) was 100% fully funded by BC Hydro to carry out this program. This study will provide energy audits and modelling of each mechanical system at a site level. Study will assist SD68 to find the optimal pathway to GHG reduction and electrification as well as, establish a strategic foundation to reducing our carbon footprint. Completion December 2024.
- Environmental Stewardship Action Plan – passed by Board of Trustees September 2022 – an 81-item action plan that includes measurable targets and objectives to reduce our carbon footprint, use of resources, waste, and greenhouse gas emissions in a manner consistent with current climate science. Action plan is posted on SD68 website. https://indd.adobe.com/view/e877e599-04ff-4109-9b7e-fa6956507e4d
- Continue to upgrade gas-intensive systems to more efficient gas systems or electrification through CNCP and/or SEP funding.

C. Mobile Sources

a. SD68 has a No-Idling policy
b. EV FLEET READY plan (CleanBC) completed November 2023.
c. As of December 2023, SD68 has six *white fleet* EV vehicles. Two purchased 2018 and 2022; two purchased 2023 and another two purchased 2024. SD68 has a strategic plan to increase EV vehicles as ICE vehicles are retired.
d. As of January 2024, SD68 has *nine EV school busses*. Two purchased 2021; two purchased 2022; three purchased 2023 and two purchased 2024.
e. One more EV bus approved to be delivered by December 2024. Current electrical capacity can accommodate this last EV bus.; however, electrical infrastructure will have to be added Summer 2024.
f. Planning for **new** electrical capacity and infrastructure required for any additional yellow and white fleet vehicles is underway and will be submitted to MOE for funding approval in September 2024. Current infrastructure is not sufficient to accommodate any additional electric vehicles.

Clean Fleet Plan:

An EV Fleet Ready Plan was completed November 2023 and is used to assist SD68 in developing a roadmap to convert its yellow and white fleet. The plan provides SD68:

- replacement schedule for white and yellow fleet vehicles
- projected costs associated with vehicle replacement
- projected costs associated with infrastructure requirements (charging and electrical capacity)
- emission savings to support conversion of its fleet

As of December 2023, SD68 is out of electrical capacity and cannot add any additional EV vehicles to its fleet. To address this, SD68 has engaged an electrical engineer to study what additional electrical capacity and infrastructure is required to facilitate the replacement of ICE yellow and white fleet for the next 5 years. Engineering report has been completed March 2024 and is in the next phase of seeking funding and approval to meet this requirement (see item f above).

D. Paper Consumption

SD68 continues to purchase paper with a recycled portion. All personal printers were removed to help reduce consumption of paper.

2023 GHG Emissions and Offsets Summary Table

***Nanaimo Ladysmith Public Schools* 2023 GHG Emissions and Offsets Summary**	
GHG emissions for the period January 1 - December 31, 2023	
Total $BioCO_2$	*38.41*
Total Emissions (tCO_2e)	*3,872*
Total Offsets (tCO_2e)	*3,468*
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO_2e)	*0*
Grand Total Offsets for the 2023 Reporting Year	
Grand Total Offsets to be Retired for 2023 Reporting Year (tCO_2e	*3,468*
Offset Investment ($)	*$86,700*

Retirement of Offsets:

In accordance with the requirements of the *Climate Change Accountability Act* and the Carbon Neutral Government Regulation, *Nanaimo Ladysmith Public Schools SD68* (**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.

PART 2. Public Sector Climate Leadership

2A. Climate Risk Management

SD68 continues to lead, explore, and implement different options to reduce the District's carbon footprint and to mitigate effects of climate change. On the operational and facilities side, SD68 plans to continue to (as funding is available):

- Replace gas-fired air heating systems with air-source heat pumps where feasible
- Replace gym air handling units with ASHP (with gas backups) and use this space as a respite area for heat dome days.
- Supplement gas-fired hydronic systems with air-water heat pumps where feasible
- Add full or partial cooling with electrification upgrades
- Add smoke mitigation ventilation programming to building control systems (close dampers if necessary)
- Add a night-time flush to bring in cooler air to keep the buildings cooler during heat waves/domes
- Install heat pumps for heating and cooling in all new portables and Childcare projects.
- Add climate-controlled irrigation systems to school fields
- Add more EV's to transportation fleet as part of long-term replacement plan
- Participate in BC Hydro Continuous Optimization Program to ensure efficient operation of all mechanical systems controlled by a building automation system
- Monitor building automations systems to ensure systems are operating when necessary to help reduce the waste
- Create a cooling strategy for sites that are capable to use mechanical cooling

2B. Other Sustainability Initiatives

As of September 2022, the Board of Trustees passed the Environmental Stewardship Action Plan (ESAP). The ESAP is a document with 81 actionable items that will operationalize the Board's strategic goal of being a leader in environmental stewardship and sustainability. Some key examples of actions include:

1. Create a GHG emission reduction plan to achieve 2030 targets
2. Electrify the school district fleet
3. Support the BC Hydro Strategic Energy Management Plan

A new Purchasing Policy was adopted September 2023 which now includes a section dedicated to Sustainable Purchasing. This document can be found at >> https://www.sd68.bc.ca/document/ap-513-purchasing/

2C. Success Stories

Some of our substantial GHG reductions are a result of mechanical upgrades either from updating boiler plants with condensing technology and adding heat pumps to replace or supplement boiler loads. Measurement and verification results of building HVAC upgrades and fleet electrification completed in 2022 are listed below. Results are posted for the period of Jan to Dec 2023 and are weather normalized.

For 2023, SD68 was successful in reducing our carbon footprint by 214 tonnes of CO2e related to the HVAC upgrades and introducing EV busses.

Site		Project Type	Usage			Normalized Savings GJ	Normalized Savings tCO2e
			2021 GJ	2022 GJ	2023 GJ		
Cedar Sec	High School	ASHP		2624	1628	996	50
John Barsby	High School	Boiler		5474	3895	1579	79
Brechin	Elem School	Boiler		911	641	270	14
Cilaire	Elem School	ASHP	670	n/a	332	338	16
P. Valley	Elem School	ASHP	432	n/a	373	59	3

EV Busses		Replaced Diesel busses	Litres >>	20,081	52

** Note - Cilaire and P Valley closed 2022 for Seismic upgrade

TOTAL	***214***

Another success story is a successful partnership with BC Hydro to securing funding to cover the cost of ASHRAE Level II Mechanical and Electrification studies for all 39 sites. This was fully funded by BC Hydro through their Integrated Feasibility Study program and will provide SD68 a strategic and tactical roadmap to identifying more opportunities to reduce GHG emissions within their building portfolio.

Executive Sign-off:

Mark Walsh — May 28, 2024

Signature — Date

Mark Walsh — Secretary-Treasurer

Name (please print) — Title

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