

STRATEGIC ENERGY MANAGEMENT PLAN

2024 UPDATE

(Compiled in February 2025)



In Partnership With:



SENIOR MANAGEMENT SUPPORT:

RICHARD RENNIE

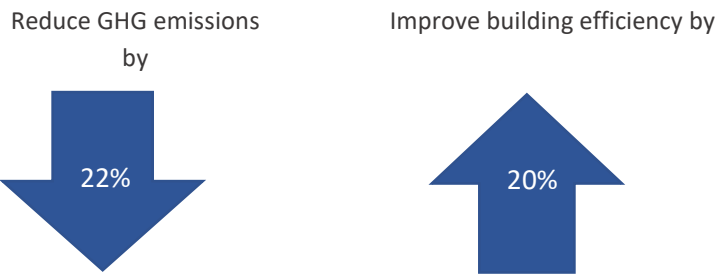
SECRETARY TREASURER

1. EXECUTIVE SUMMARY

School District No. 42 Maple Ridge-Pitt Meadows (SD42) supports the BC Climate Action Legislation and the targets set by the [Climate Change Accountability Act](#), contingent on sufficient funding support. SD42 has been undertaking energy management projects since 2008.

To align with the provincial greenhouse gas (GHG) emissions reduction goals by 40% by the year 2030 from 2007 levels, the initial version of the Energy Management Plan was created and approved by the Board of Education in 2015, and it was implemented that same year in collaboration with BC Hydro. The projects identified in this plan were completed in 2021. Through the first plan, SD42 carried out lighting and heating, ventilation, and air-conditioning (HVAC) upgrade projects, which amounted to a one-time capital investment of \$5.7 million. This has resulted in an estimated energy savings of 5.6 million kWh (electricity) and 9,823 GJ (fuel), totaling 8.33 million ekWh, with an estimated avoided annual operating cost of \$0.61 million.

An updated Environmental Sustainability Plan was created for the school district’s [Strategic Facilities Plan](#), which was approved by the Board of Education in 2022. This Environmental Sustainability Plan outlines capital investments that will reduce GHG emissions by 22% by 2026 compared to 2010 while improving building performance by 20%.



SD42’s Strategic Energy Management Plan offers a clear roadmap for current and future years to support its goals and targets for reducing energy consumption and GHG emissions.

Contents

1. EXECUTIVE SUMMARY	2
2. SITUATIONAL ANALYSIS	4
2.1.ORGANIZATIONAL PROFILE.....	4
2.2.STAKEHOLDER ENGAGEMENT PLAN	4
2.3.DRIVERS FOR ENERGY MANAGEMENT	5
3.3.1 INTERNAL DRIVERS.....	5
3.3.2 EXTERNAL DRIVERS	5
2.4.CUMULATIVE ENERGY SAVINGS.....	5
2.5.ENERGY MANAGEMENT ASSESSMENT OUTCOMES	6
2.6.KEY PERFORMANCE INDICATORS.....	8
2.7.TOTAL GREENHOUSE GAS EMISSIONS	9
2.8.TOTAL ENERGY USE INTENSITY	9
4. OUR ACTIONS.....	11
4.1.INCENTIVE SUPPORT	11
4.2.PROJECT LIST	11
4.1.1 HVAC CONTINUOUS OPTIMIZATION.....	12
4.1.2 BOILER UPGRADE	12
4.3.OTHER PROJECTS	12
4.2.1 LOW CARBON ELECTRIFICATION.....	12
4.2.2 LIGHTING UPGRADES	13
4.4.FLEET ELECTRIFICATION PLAN.....	14
4.5.NEW CONSTRUCTION	14
4.6.STUDENT AND STAFF ENGAGEMENT.....	15
4.5.1 ENERGY WISE NETWORK	15
4.5.2 OTHER BEHAVIORAL PROGRAMS.....	15
5. PLANS FOR THE FUTURE	17
5.1.MECHANICAL UPGRADES.....	17
5.2.LIGHTING UPGRADES	17
5.3.HVAC CONTINUOUS OPTIMIZATION.....	18
5.4.EV CHARGING INFRASTRUCTURE.....	18
5.5.BUILDING ADDITIONS	18
5.6.STUDENT AND STAFF ENGAGEMENT.....	18
6. APPENDICES	20
6.1.BCH SEMP REQUIREMENT FORM	20
6.2.ACRONYMS AND ABBREVIATIONS	21

COMMITMENT

One of the main pillars of the SD42's [Strategic Plan](#) is:

"Forward-thinking, research-informed, effective, efficient, sustainable, value-based and connected school district."

The Environmental Sustainability Plan provides an actionable and comprehensive roadmap for achieving energy and cost savings in the school district's facilities. It serves as a framework for continuous improvement of energy performance in support of long-term energy and cost reduction goals. The savings achieved through the implementation of this plan will support our central purpose, student learning.

2. SITUATIONAL ANALYSIS

2.1. ORGANIZATIONAL PROFILE

NUMBER OF STUDENTS	Approximately 17,000
NUMBER OF STAFF	Approximately 2500
ENERGY MANAGEMENT TEAM	Richard Rennie , Secretary-Treasurer Louie Girotto , Director of Facilities Ashish Dev Manager, Energy and Environmental Sustainability Aron Garrecht , BC Hydro Key Account Manager
NUMBER OF SITES	35
KEY PERFORMANCE INDICATORS	Total GHG emissions (tCO ₂ e) Total EUI (ekWh/m ²) Natural Gas EUI (ekWh/m ²) Cost of Energy (\$)
UTILITIES PRELIMINARY BUDGET (for the 2024/25 fiscal year)	Electricity: \$1,041,397 Natural gas: \$771,400 Propane: \$20,500 Water and sewer: \$490,000 Waste streams: \$310,041 Carbon offsets: \$102,000

2.2. STAKEHOLDER ENGAGEMENT PLAN

SD42 developed a comprehensive [stakeholder engagement framework](#) for the 2021/22 engagement on its current [Strategic Facilities Plan](#) (which includes the District's Sustainability Plan as Appendix C) to guide its facilities planning and management. SD42's strategic energy management plan aligns with the following key engagement principles and objectives:

Key Engagement Principles:

- **Transparent and Accountable:** Proactively communicate accurate and consistent information about processes, issues, and constraints while conveying how input will be considered in Board of Education decisions.
- **Accessible:** Ensure communications are clear and provide information about learning trends, facility trends, issues, and constraints to support meaningful input.
- **Future-Oriented:** Commit to working collaboratively and innovatively with all stakeholders to identify opportunities that will support learners into the future.

- **Sustainable:** Engage with stakeholders using the foundation provided by the Strategic Plan, the Strategic Facilities Review, and a vision for environmentally and socially sustainable facilities.

Engagement Objectives:

- Communicate information clearly and effectively, including what was heard and how it informed decision-making and the plan for future facilities.
- Encourage meaningful input by providing information that builds awareness and understanding about current and future trends in school district facilities, planning, and financial constraints.
- Understand the needs of all stakeholders to ensure these are reflected in plans for future facilities and programs.
- Generate input through a process that is easy, accessible, and minimizes barriers to participation.

This engagement framework ensures that SD42's facilities planning is inclusive, transparent, and aligned with the diverse needs of its community.

2.3. DRIVERS FOR ENERGY MANAGEMENT

3.3.1 INTERNAL DRIVERS

The key drivers for energy management in SD42 are reflected in [SD42 Policy 6530: Environmental Sustainability](#) and include cost efficiency, environmental responsibility, and educational impact. By minimizing energy consumption and optimizing resource use, SD42 reduces operational costs, allowing for reinvestment in student learning. Environmental sustainability efforts align with SD42's commitment to reducing its carbon footprint and promoting responsible stewardship of natural resources. Additionally, integrating sustainability into educational programs fosters a culture of conservation among students and staff, equipping them with the knowledge and skills to support long-term environmental and financial sustainability.

3.3.2 EXTERNAL DRIVERS

BC Climate Action Legislation and the targets (40% below 2007 levels by 2030) established by the [Climate Change Accountability Act](#).

2.4. CUMULATIVE ENERGY SAVINGS

SD42 has been undertaking projects that improve occupant comfort, reduce maintenance costs, and improve infrastructure reliability. Examples include upgrading the lights to LED, upgrading boilers and unit ventilators, and adding heat pumps to the heating loops to reduce dependence on gas heating and reduce GHG emissions.

From April 2013 (baseline) to December 2024, SD42 cumulatively saved 33,091.24 GJ of fuel and 31,863,760.77 kWh of electricity, equating to an overall energy savings of 41,055,844.89 ekWh.

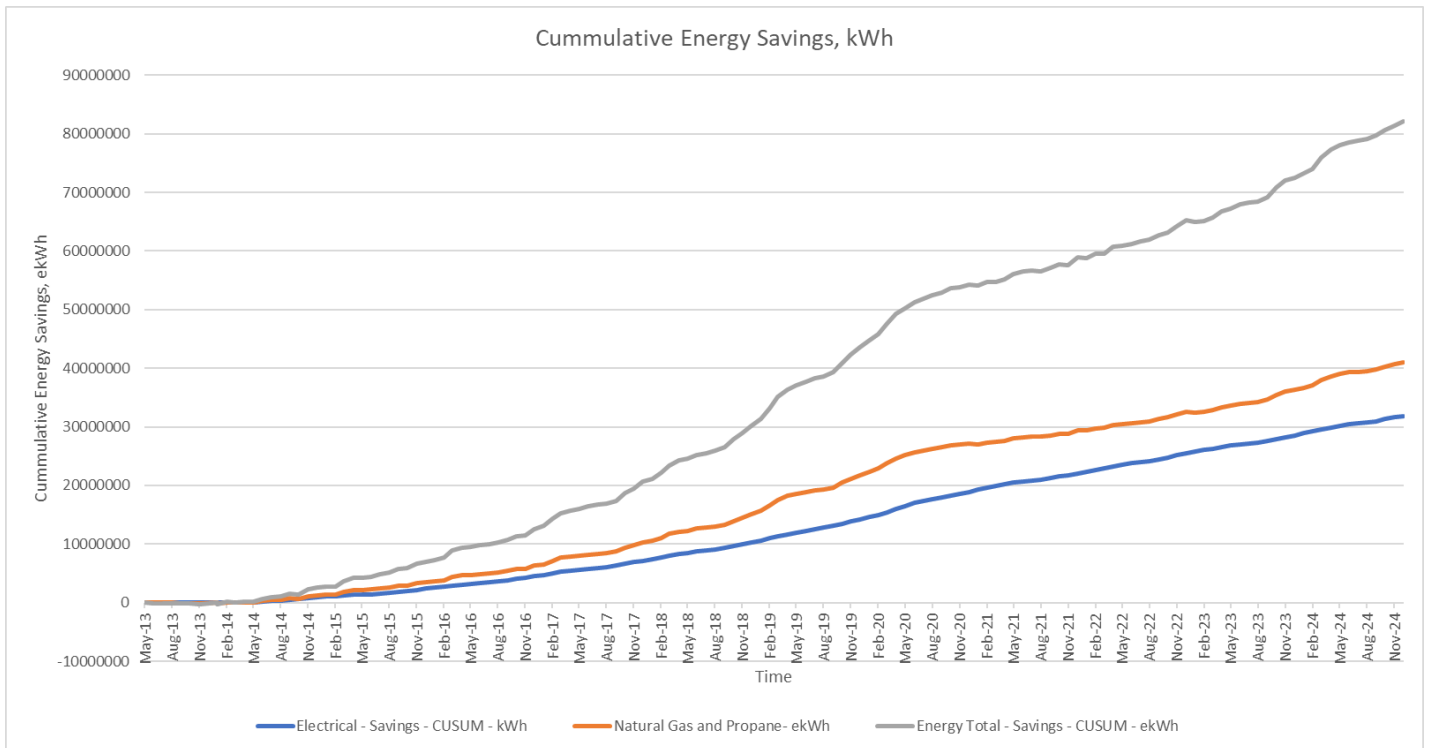
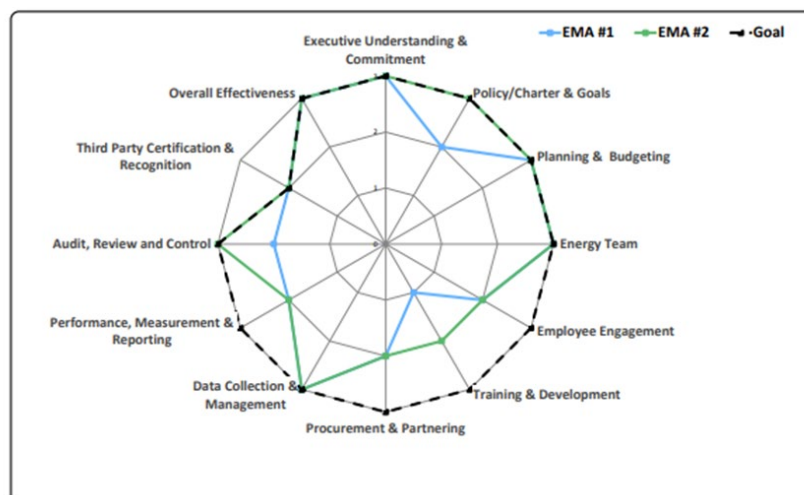


Figure 1: CUSUM of Energy Savings since 2014

2.5. ENERGY MANAGEMENT ASSESSMENT OUTCOMES

To assist SD42 in optimizing energy management, BC Hydro has sponsored participation in an annual Energy Management Assessment (EMA) with the end goal of continuously improving the strategic energy management plan. CLEAResult, in partnership with BC Hydro, facilitated the latest EMA workshop on November 4, 2024. The results below are from the November 2024 EMA workshop.

CLEAResult uses the ISO 50001 Deming Cycle of Plan-Do-Check-Act (PDCA) to gauge the overall effectiveness of our district's energy management program. Under each action item, there are selected management areas that define our progress on the identified improvement goals. This report outlines the improvements in energy management practices to be included in a long-term strategic energy management plan (SEMP) for SD42. As per the CLEAResult report published on November 4, 2024, SD42 is on the path of implementing a well-structured and energy conservation-oriented culture. The diagram below, taken from their report, displays our strengths and areas for improvement.



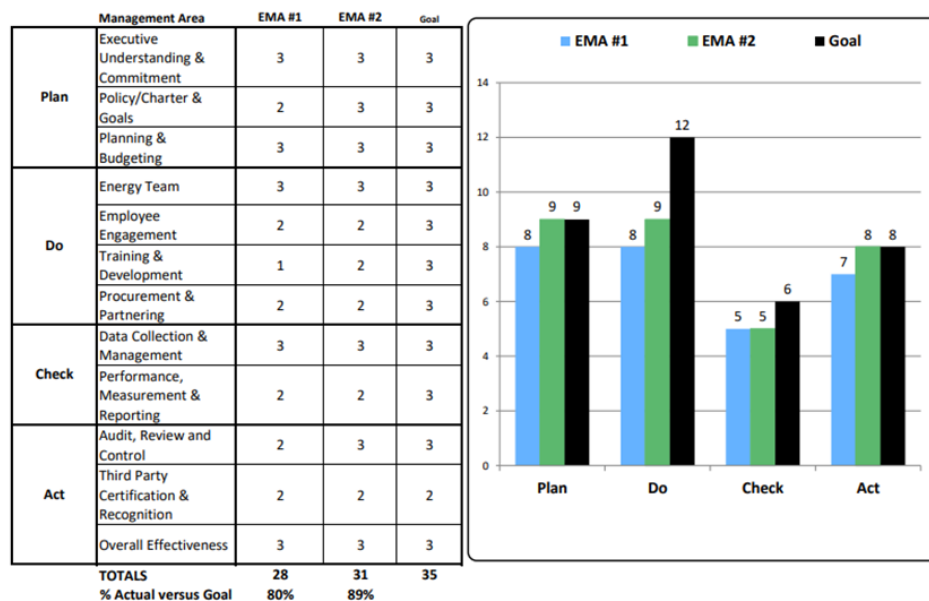


Figure 2 : EMA v/s Goals

As per the report, SD42 has taken proactive steps in training and development to create an influential energy management culture. The EMA score was 89%. Key findings in the EMA include:

- Overall, the SD42's energy team underwent operational changes last year. It is still pursuing a solid inclination towards Energy Management, supported by a strong energy manager with well-planned actions for continuing energy efficiency.
- SD42 is advanced in data collection and performance measurement. This strength could be used to share consumption profiles and energy trends with staff across SD42's schools to encourage employee engagement in sustainability initiatives.
- The executive level is highly engaged and supportive of energy conservation in SD42 with regular meetings and updates.
- SD42 has significantly progressed across multiple categories, achieving "fully implemented" status. SD42 has built on previous EMA actions with effective initiatives and remains committed to awareness programs and training.

In their analysis, CLEAResult compiled several recommendations and suggestions to assist us with developing an action plan to improve our strategic energy management plan. A compiled list of recommendations and SD42's response is tabulated below. We continued to work on these recommendations and expand our successes from last year:

Action Plan

Topic	Action	SD42's Response
Employee Engagement	Do	
	Consider establishing a dedicated email address to receive and manage ideas related to sustainability initiatives. This will help streamline communication and ensure valuable suggestions are not overlooked.	SD42 plans to create a student sustainability council where teachers and students communicate sustainability-related ideas. We also plan to start an email address called energymanagerlistens@sd42.ca , which will focus on managing ideas related to sustainability initiatives.
	Begin recruiting individuals to act as sustainability contacts and create a strategic plan to engage students actively. Involving students early can inspire long-term commitment to sustainability practices.	This has already been initiated. A survey to collect details of sustainability contacts from each school has been published. The next step is to begin monthly meetings with sustainability contacts to discuss sustainability initiatives.
Training and Development	Engage tradespeople by organizing informative sessions such as lunch-and-learn events or morning briefings.	SD42 continues to engage trades staff by developing training programs for district maintenance staff focused on reducing GHG emissions.
	Maintain and refine the current system that identifies training needs, ensuring opportunities are consistently offered to schools, faculty, and technical staff. This approach promotes continuous	SD42 has created a District-wide sustainability workshop for teachers and administrators focused on bringing sustainability to the classroom. The workshop will be followed by a survey with a call to

Procurement & Partnering	learning and skill development across the organization.	action to initiate further dialogues. This training will be followed by sustainability training for custodial staff. We plan to offer this training every year to create a change.
	Develop a detailed, formal specification sheet outlining general guidelines for commonly purchased items, such as Energy Star ratings or other sustainability standards.	SD42 is updating the current Procedure 4600.2 to incorporate energy efficiency into purchasing decisions.
	Notify the procurement team about any policy updates after revising the standards. Timely communication will ensure alignment with new expectations and guidelines.	
Check		
Performance, Measurement & Reporting	Explore the possibility of using PUMA software to create alerts that monitor building energy usage against predefined thresholds. This proactive approach can help detect inefficiencies and prompt timely interventions.	SD42 will develop a process to track energy usage better and create alerts using PUMA Software.
	Share energy savings data with schools by presenting their previous year's baseline and current savings trend. Providing this comparison can motivate schools to sustain or improve their conservation efforts.	SD42 is planning to undertake a pilot review of a Virtual Submetering solution to give schools a detailed, hourly view of energy consumption. The energy dashboards can communicate progress to staff, students, and the community.
Suggestions for future improvements and sustainability		
Action		SD42 Response
Plan		
Executive Involvement	Consider encouraging the executive team to increase communication about energy achievements by sharing rewards and success stories.	The energy team already has a bimonthly newsletter called “Energy Catalyst.” The Superintendent has initiated a newsletter for the District Leadership Team called “The Weekly” which can be utilized by members of the energy management team to communicate achievements and success stories focused on energy management and sustainability.
Do		
Energy Team	Consider setting up regular communication to discuss energy initiatives during district leadership meetings.	There are existing communication channels including a wide variety of recurring management meetings that can be utilized to discuss energy initiatives. The district also has an annual Board of Education review in May of initiatives focused on energy and sustainability.

The components of this EMA serve as a framework within which an Energy Management System can be improved.

2.6. KEY PERFORMANCE INDICATORS

Three Key Performance Indicators (KPIs) measure SD42's energy performance: Total Greenhouse Gas Emissions Intensity (Total GHG emissions in tCO₂e), Total Energy Use Intensity (Total EUI in ekWh/m²), Natural Gas Energy Use Intensity (ekWh/m²), and Cost of Energy. The following table summarizes the current benchmark metrics for 2024.

Building Type	Total GHG emissions (tCO ₂ e)	Total EUI (ekWh/m ²)	Natural Gas EUI (kWh/m ²)	Cost of Energy (\$)
Elementary School	1,438	147	106	\$695,006
Secondary School	1,585	183	104	\$880,762
Other Building	153	174	113	\$101,067

2.7. TOTAL GREENHOUSE GAS EMISSIONS

When emissions are broken down into subsets, **the most significant contributors are natural gas and propane**, accounting for 86% of all emissions. Vehicle fuel is second, accounting for 6%, electricity use is third, at 5%, and paper use is last, at just 3% of overall emissions—shown in the following chart. To align with 2030 emission reduction goals, the Environmental Sustainability Plan prioritizes implementing natural gas conservation measures.

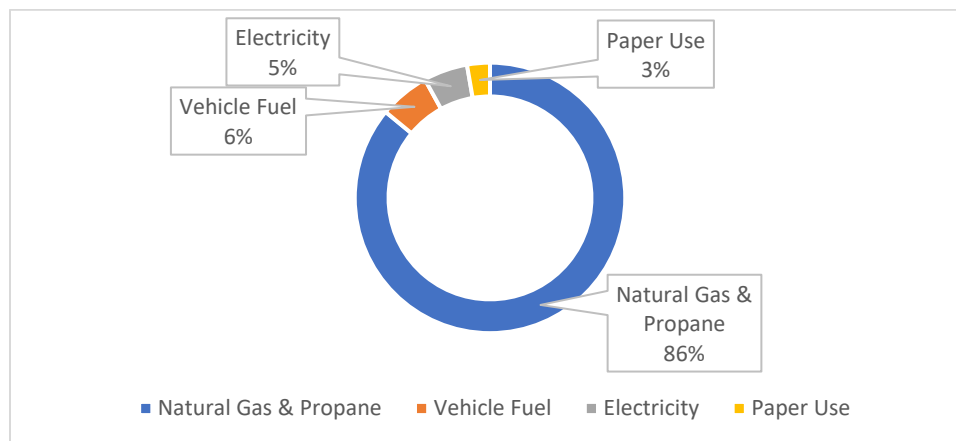


Figure 3: % Total Emissions by Usage for last year

Vehicle-related emissions are the second largest contributor to emissions (6%). Gasoline accounts for 90% of vehicle-related emissions, while diesel accounts for 10%. To reduce our vehicle-related emissions, the plan focuses on replacing end-of-life vehicles with lower-emission vehicles and incorporating electric vehicles in the school district fleet where feasible.

2.8. TOTAL ENERGY USE INTENSITY

Total Energy Use Intensity (EUI) is used to understand the health and overall efficiency of a building archetype (elementary, secondary, and other) in terms of total energy use, which includes electricity, natural gas, and propane. Total EUI normalizes the total energy consumption of the building over the floor area – allowing for a simplified comparison of building energy performance for all school district facilities. Total EUI metrics show the combined natural gas, electricity, and propane EUI of individual buildings for each building type. Results are summarized as key takeaways with detailed graphs further below.

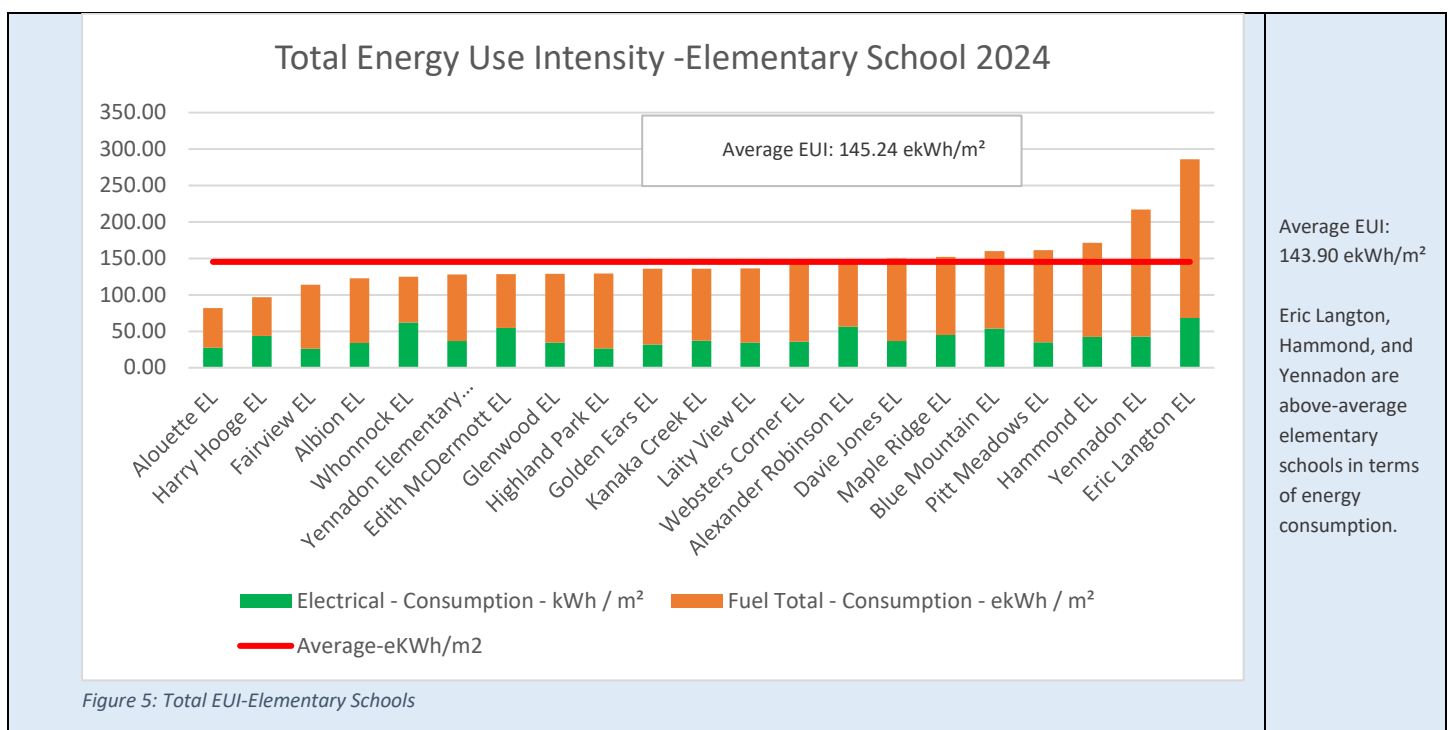


Figure 5: Total EUI-Elementary Schools

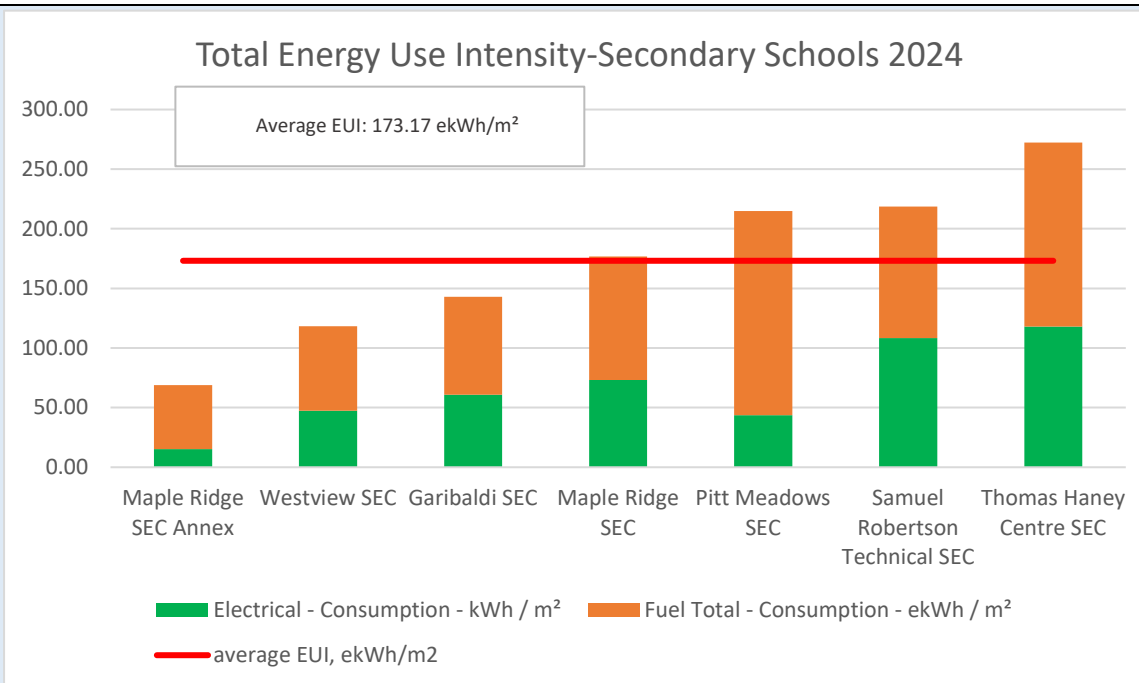


Figure 6: Total EUI-Secondary Schools

Average EUI:
170.10 ekWh/m²

Samuel Robertson Technical, Pitt Meadows Secondary and Thomas Haney are above-average secondary schools in terms of energy consumption. Maple Ridge Secondary Annex uses a disproportionate amount of natural gas compared to electricity to run the building.

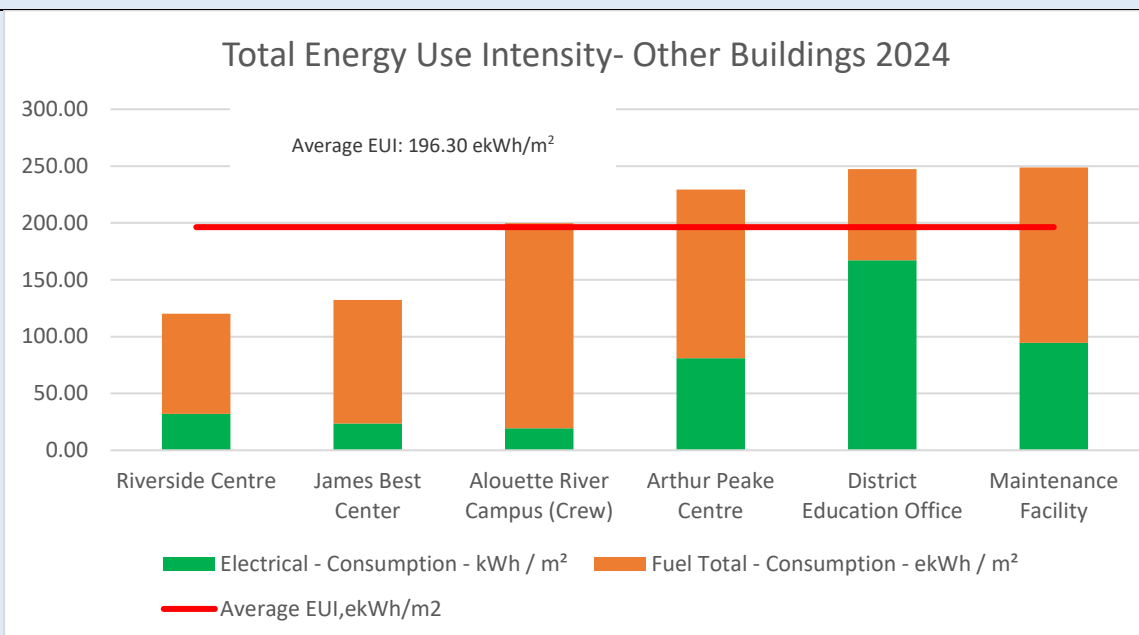


Figure 7: Total EUI-Other Buildings

Average EUI:
195.76 ekWh/m²

The Arthur Peake Centre maintenance facility and District Education Office are above-average buildings in terms of energy consumption.

4. OUR ACTIONS

4.1. INCENTIVE SUPPORT

In 2024, SD42 received \$170,471 in incentives (\$105,452 from BC Hydro, \$57,019 from FortisBC, and \$8,000 from other sources). These incentives do not include further annual savings in energy costs and reduced GHG emissions.

4.2. PROJECT LIST

The table below summarizes the energy efficiency measures for heating, ventilation, and air conditioning (HVAC) that will be implemented in the upcoming years (as of December 2024). Energy conservation and low-carbon measures have been added to minor capital projects eligible for capital plan funding under the School Enhancement Program (SEP) and the Carbon-neutral Capital Program (CNCP). Energy conservation projects not funded by the Province will be financed through the sustainability plan reserve in the Board's Local Capital Fund up to a maximum of \$0.61 million.

SCHOOL	PROJECT SCOPE	STATUS	FUNDING SOURCE	COST	ENERGY CONSERVATION SAVINGS **(GJ/kWh)
Yennadon Elementary	HVAC Continuous Optimization	Study Phase	Local Capital Reserve	\$20,000	TBD*
Maple Ridge Elementary	HVAC Continuous Optimization	Study Phase	Local Capital Reserve	\$20,000	TBD*
Westview Secondary	HVAC Continuous Optimization	Study Phase	Local Capital Reserve	\$44,293	TBD*
Albion Elementary	HVAC Continuous Optimization	Completed	Local Capital Reserve	\$21,472	40597 kWh 693 GJ
Garibaldi Secondary	HVAC Continuous Optimization	Completed	Local Capital Reserve	\$15,476	61,252 kWh 768 GJ
Laity View Elementary	Boiler Plant Upgrade	Completed	Annual Facilities Grant (2024)	\$230,877	300 GJ
Maintenance Facility	Boiler Plant Upgrade	Completed	Annual Facilities Grant (2024)	\$151,803	400 GJ
Whonnock Elementary	Boiler Upgrade plus energy conservation scope and low carbon upgrade	Completed	Minor Capital Plan Submission 2023-24	\$1,497,256	729 GJ
Edith McDermott Elementary	Boiler Upgrade, VAV and VSD upgrade, and Low Carbon Upgrade	Implementation	Minor Capital Plan Submission 2024-25	\$1,450,000	338 GJ
Davie Jones Elementary	UV Replacement	Proposed	Minor Capital Plan Submission 2024-25	\$520,000	53.5 GJ
Golden Ears Elementary	Boiler Upgrade	Proposed	Minor Capital Plan Submission 2024-25	\$550,000	302 GJ
Highland Park Elementary	UV Replacement-Phase 1	Proposed	Minor Capital Plan Submission 2024-25	\$650,000	87.5 GJ
Harry Hooze Elementary	UV Replacement-Phase 1	Proposed	Minor Capital Plan Submission 2024-25	\$975,000	180 GJ
Maintenance	Boiler Upgrade	Proposed	Minor Capital Plan Submission 2024-25	\$410,000	400 GJ
Maple Ridge Elementary	Boiler Upgrade	Proposed	Minor Capital Plan Submission 2024-25	\$520,500	220 GJ
Maple Ridge Secondary	Boiler Upgrade	Proposed	Minor Capital Plan Submission 2024-25	\$850,000	440 GJ
Riverside Elementary	UV Replacement-Phase 1	Proposed	Minor Capital Plan Submission 2024-25	\$780,000	180 GJ
TOTAL				\$8,706,677	116,502 kWh 5,298 GJ

*TBD-To be determined. **-Estimated

All numbers are an estimated amount based on the level I energy study.

4.1.1 HVAC CONTINUOUS OPTIMIZATION

The school district has applied for the BC Hydro HVAC Continuous Optimization program. The cost-effectiveness of a continuous optimization project partly depends on the age of the equipment, systems, and controls. This optimization process is appropriate for buildings with equipment and systems less than 12 years old or several years from the end of their useful life.

4.1.2 BOILER UPGRADE

SD42 has applied for several projects through the Ministry of Education and Child Care’s Minor Capital Plan program. The scope of these projects is to replace the existing original boilers, pumps, valves, and controls and add variable frequency drives and CO₂ sensors in the gymnasium. Where it makes sense, the application includes a low-carbon upgrade, including installing an air-source heat pump to provide low-temperature heating water and low-carbon operation. The heat pump could also provide partial mechanical cooling for the school, which will be especially important to improve building resiliency in the face of the future climate.

4.3. OTHER PROJECTS

The following projects have been completed in the Annual Facilities Grant plan for 2023/24.

4.2.1 LOW CARBON ELECTRIFICATION

SD42 has been undertaking Fuel switching projects to convert existing natural gas-heated systems to electricity by replacing natural gas rooftop units with heat pumps.

SCHOOL	PROJECT SCOPE	STATUS
Garibaldi Secondary	3 Rooftop Units Replacement	Completed
Laity View Elementary	1 Rooftop Unit Replacement	Completed

The Garibaldi Secondary School project scope was to replace three 5-ton gas-fired rooftop equipment with three new air-to-air heat pumps with gas-fired backups, new duct distribution, air balancing, and DDC controls.



Laity View Elementary's project scope was to replace one 7.5-ton gas-fired rooftop equipment with one new air-to-air heat pump with gas-fired backup, new duct distribution, air balancing, and DDC controls. The heat pump could also provide partial mechanical cooling for the school, which will be especially important as we ensure our buildings are more resilient in the face of our future climate.



Before Upgrade



After Upgrade

Whonnock Elementary

SD42 undertook a deep energy retrofit at Whonnock Elementary to electrify the building and reduce natural gas consumption and related emissions. The boiler plant was upgraded with high-efficiency condensing boilers, existing heating coils were upgraded to low-temperature coils, DDC was upgraded, variable-speed drives were added to pumps and air handlers, and Air Source Heat Pumps were added. This upgrade will result in expected energy savings of 729 GJ.



4.2.2 LIGHTING UPGRADES

The energy management plan initiatives implemented from 2015 to 2019 include lighting upgrades on nearly every building in SD42. Every year, SD42 undertakes several lighting upgrade projects with funding support from BC Hydro to reduce energy consumption and improve learning spaces. These upgrade projects include changing from existing HID, incandescent, and fluorescent lights to LEDs. Last year, SD42 completed LED upgrades at the District Education Office (DEO) and Thomas Haney Secondary Music Room as outlined in the Climate Change Accountability Report 2023.

4.4. FLEET ELECTRIFICATION PLAN

The CleanBC Roadmap to 2030 has set new zero-emission vehicle (ZEV) targets and will set new standards for medium—and heavy-duty vehicles. By 2030, ZEVs will account for 90% of all new light-duty vehicle sales in the province (with targets of 26% by 2026 and 100% by 2035).

To that end, SD42 has completed a holistic analysis of potential ZEV transition plans. The analysis is detailed in a report that outlines the methodology, assumptions, and results which cover potential financial, environmental, electrical and infrastructure implications. The report outlines three potential transition scenarios – a “business as usual” scenario where all fleet vehicles are replaced with comparable Internal Combustion Engine (ICE) vehicles, an aggressive electrification scenario where all vehicles are replaced with electric vehicles at the end of their useful lifespan, and a conservative electrification scenario where replacements are a blend of electric and ICE vehicles within the budgetary constraints of SD42.

In 2023, SD42 bought its first electric vehicle (EV), a Ford E-transit van, to replace an existing fleet vehicle. With charging infrastructure in place, replacing the fleet vehicle helps SD42 reduce tailpipe emissions and save on rising fuel costs. A comparative analysis of Ford Transit Cargo van v/s Ford E Transit shows a lifetime savings of approximately \$66,000 if gas prices remain at \$1.899/liter.



In 2024, SD42 installed four new EV chargers at the Maintenance Office to service the new Maintenance EV and future EVs; SD42 now has eight EV chargers in total.

SD42 also earns carbon credits as a Part-3 Fuel supplier under the Low Carbon Fuel Standard (LCFS) by offering EV charging facilities to employees. To date, SD42 has accumulated 17 credits, which are saleable in the market. Recently, SD42 signed an agreement with the Association of School Transportation Services of BC (ASTSBC) to act as the aggregator and sell these credits.

4.5. NEW CONSTRUCTION

SD42 received funding approval in November 2022 for the seismic replacement and expansion of Eric Langton Elementary school. During construction, which began in May 2024, the existing school and the three portable classrooms are being used to support students. The new school building is expected to complete and occupied in 2026 at which point the existing school will be decommissioned and demolished. Childcare space will be included within the replacement school building. For more details, please follow the [link](#).

SD42 received funding approval in August 2024 for the seismic replacement of Pitt Meadows Secondary school, which will include a neighbourhood learning centre. This project is now in the design and development phase with construction anticipated to start in 2026. For more details, please follow the [link](#).

4.6. STUDENT AND STAFF ENGAGEMENT

4.5.1 ENERGY WISE NETWORK

SD42 has participated in the Energy Wise Network program since 2016. Several engagement campaigns have been organized since 2016, including the annual Go Green Together campaign (formerly known as the Energy Challenge) and the Holiday Shutdown (held in 2019). Last year, SD42 undertook a pledge tree campaign focusing on sustainability and educating students on the importance of sustainability and climate change as outlined in the Climate Change Accountability Report 2023.

4.5.2 OTHER BEHAVIORAL PROGRAMS

1. Holiday Shutdown Campaign

SD42 organized a spring break holiday shutdown campaign to raise awareness and prompt behavioral change. Impactful posters and shutdown checklists were distributed throughout the school district. Participating schools were asked to complete checklists for their school and submit behavioral action photos. The winners of this campaign were Davie Jones Elementary and Harry Hooge Elementary.



Spring Holiday
Shutdown Campaign



2. HVAC Controls Training for Trades Team

SD42 partnered with two service providers to deliver training sessions on the basics of HVAC controls and identify energy savings and optimization opportunities. The training occurred over four days (July 22, 23, 29, and 31, 2024). BC Hydro and FortisBC funded the online training sessions.

To maximize the impact of this training, we invited other districts to participate. SD36 (Surrey), SD38 (Richmond), SD41 (Burnaby), and SD43 (Coquitlam) also took part. Thirty participants from various school districts attended the online training session.

Following the training session, attendees were surveyed on their level of knowledge satisfaction. Over four days, 52 responses were received.

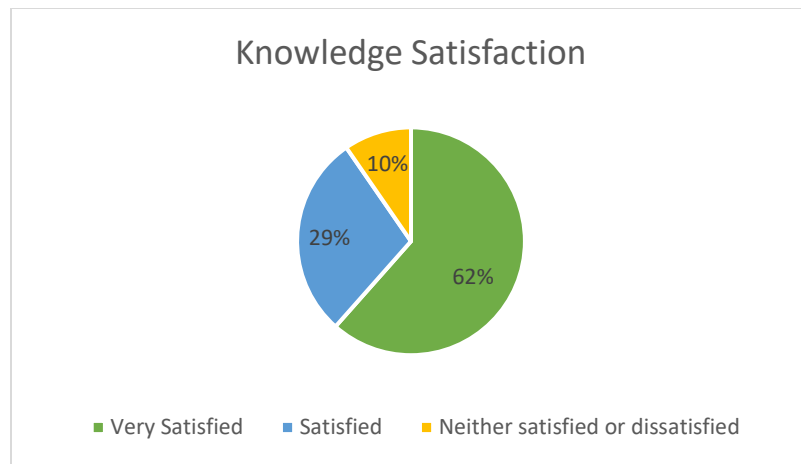


Figure 3: Knowledge Satisfaction

According to the feedback gathered from the survey, the event was a great success. As shown in the chart above, out of 32 respondents, 62% of the attendees were “very satisfied” with the training and felt confident in making energy-saving changes to their organizations.

3. Sustainability Stickers for Students to celebrate Earth Day

To appreciate and celebrate Earth Day and sensitize staff and students about energy conservation and sustainability, SD42 issued Energy Star and Energy Leaders stickers for students of all ages and schools. More than 4000 stickers were distributed across 11 locations to celebrate the day.



4. Energy Catalyst Newsletter

SD42 launched a bimonthly newsletter to share SD42’s sustainability initiatives with the community. Three editions have been published on the SD42 website at www.sd42.ca/energy-environmental-sustainability since its initiation. The idea is to bring forward sustainability stories that happen throughout SD42.



5. Tree Plantation Drive at Alexandra Robinson Elementary

As a joint effort, the City of Maple Ridge and SD42 planted nearly a dozen trees next to the school as part of a planting drive through a BC Hydro greening grant. This was an excellent opportunity for students to learn about the importance of planting trees and their benefits to the community.



"SAY TREES"

5. PLANS FOR THE FUTURE

SD42 has prioritized energy management and environmental sustainability as part of its overall strategy to reduce GHG emissions. SD42 will continue with HVAC and lighting upgrades to contribute to more energy-efficient buildings and better learning and working environments for students and staff. As part of the design process for new schools, SD42 will also continue to consult with energy modelers to ensure that all new buildings perform at optimal levels of energy efficiency.

SD42 plans to create a Low-Carbon Strategic Action Plan (LCSAP) to prepare for 2027 and beyond. The plan aims to develop pillars and action items promoting energy management, sustainability, and climate change. The new plan will also entail a scenario analysis of our emissions trajectory based on cost. A comprehensive list of projects will support these action items to help SD42 reach the provincial emission reduction goals.

SD42 envisions undertaking the following projects and initiatives:

5.1. MECHANICAL UPGRADES

The detailed list of mechanical upgrades planned for the upcoming year will be outlined in the Climate Change Accountability Report 2024, which will be published in May 2025.

5.2. LIGHTING UPGRADES

In 2024, SD42 completed a BC Hydro-funded feasibility study on lighting upgrades for six schools. We observed that most of the lighting was fluorescent and needed to be upgraded to LED.

We plan to undertake at least one lighting upgrade in the upcoming year. The schools up for LED bulb replacements are shown in the table below.

School	Energy Savings (kWh/year)	Material & Labour Cost (\$)
Glenwood Elementary	25,178	\$84,910
Webster's Corners Elementary	19,728	\$68,477
Maple Ridge Secondary Annex	24,551	\$81,963
Yennadon Elementary	23,032	\$94,512
Samuel Robertson Technical	81,751	\$239,460
Thomas Haney Secondary	117,896	\$498,077

5.3. HVAC CONTINUOUS OPTIMIZATION

SD42 continues undertaking continuous optimization (C.Op.) studies to review its facilities to improve overall building performance and reduce GHG emissions. SD42 will review the following schools in 2025:

- Maple Ridge Elementary
- Yennadon Elementary
- Westview Secondary

Based on Energy Use Intensity, SD42 plans to enroll Webster's Corners Elementary, Davie Jones Elementary, and Kanaka Creek Elementary in 2026 and Maple Ridge Secondary, Blue Mountain Elementary, and Pitt Meadows Elementary in 2027.

5.4. EV CHARGING INFRASTRUCTURE

SD42 spans two cities. However, Pitt Meadows does not have an EV charging infrastructure, so expanding the district's EV charging network in this city is strategic. After a detailed financial evaluation, SD42 will install two EV Chargers at Edith McDermott Elementary. This project will be funded through the provincial School Enhancement Program along with rebates from BC Hydro and NRCAN (through SWITCH Energy).

5.5. BUILDING ADDITIONS

In September 2024, the Ministry of Education and Child Care (MECC) announced it would fund a

- five-classroom prefabricated addition at [Blue Mountain Elementary](#).
- eight-classroom prefabricated addition at [Golden Ears Elementary](#).

The use of prefabricated construction means students will soon be learning in modern classrooms that look just like regular schools. With sustainable and energy-efficient designs, the additions align with the Province's CleanBC targets and meet B.C.'s enhanced energy requirements.

5.6. STUDENT AND STAFF ENGAGEMENT

SD42 will continue sensitizing students and staff on sustainability and climate change and launch several promotional campaigns. The campaigns planned for the following year are as follows:

1. Teachers training on sustainability, climate change, and waste management

SD42 will offer a training program on a professional development day to help give teachers tools focused on sustainability, climate change, and waste management. This training will be organized under the BC Hydro Energy Wise Network Program. The idea is to bring energy conservation and sustainability to the classroom and offer tools to the teachers.

The agenda will include talks on climate change, lesson plans offered by BC Hydro PowerSmart for schools and eco-schools, waste management in schools, alternate paper, and reducing the use of single-use plastic in schools through innovative solutions offered by Friendlier Plastics. The workshop will be concluded with a survey asking teachers to commit to undertaking at least one initiative this year at their school.

2. Sustainability Training for Custodial Staff

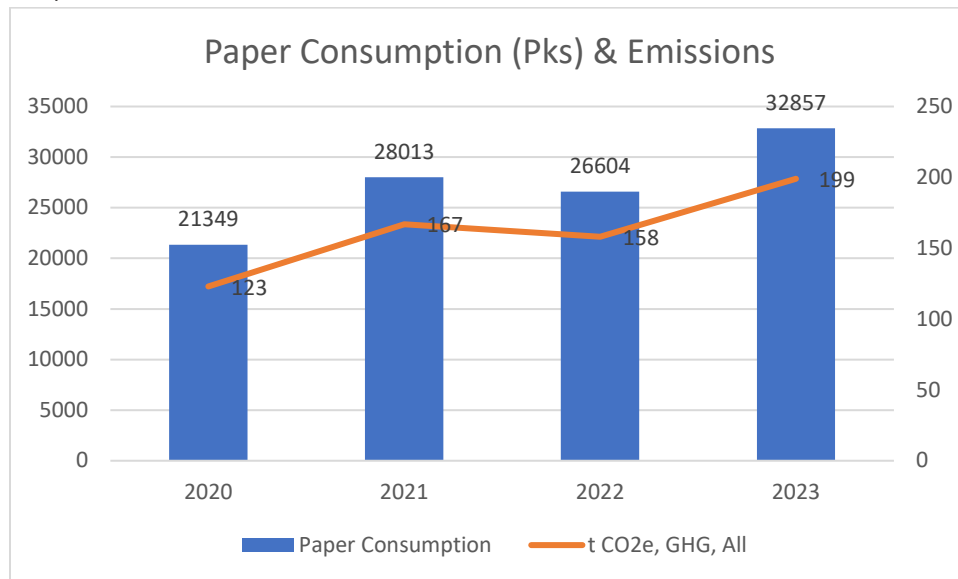
In 2025, we plan to undertake sustainability training for custodial staff to promote sustainability behavior throughout SD42. The idea is to share success stories that SD42 has witnessed and what we can learn from these stories.

3. Waste Audits at Schools

SD42 will undertake waste audits to promote improved diversion rates and reduce school waste contamination. It will also focus on creating a video to engage students in best practices for waste management in schools.

4. Alternate Paper Use Program

Paper is the fourth contributor to SD42's emissions profile. SD42 is in the process of finding ways to reduce its paper consumption. For the last five years, SD42 has been using Papercut to sensitize users about their paper consumption. SD42's paper consumption has increased over the previous four years. SD42 plans to reduce paper consumption by encouraging staff to go paperless, using digital signing as a norm, and having double-sided printing as the default setting on all printers.



SD42 is also exploring the possibility of replacing its existing 8.5" to 11" paper (white), which has the maximum usage in SD42 (approx. 89%), with Sugar Sheets paper. It is estimated that SD42 will be able to reduce annual GHG emissions by up to 65 tonnes¹ and achieve net annual savings of up to \$25,000². SD42 is reviewing the feasibility of using Sugar Sheets and the potential impact on the warranty of the printing devices. Based on the results of this review, SD42 plans to expand this program. Paper usage for 2024, will be compiled in May 2025.

¹ Estimated based on 2012 emission factors provided by CAS for paper emissions.

² Estimated based on rate of \$55 per box if schools order a pallet of 40 boxes.

6. APPENDICES

6.1. BCH SEMP REQUIREMENT FORM

Key Requirements	SEMP page number(s) where this is included	BC Hydro to Complete
1. EXECUTIVE SUMMARY 1-2 page summary that includes		
a) Energy Targets	2	
b) kWh target for the current year	2	
c) Budget approval for a current year plan	2	
d) Progress to date on the long-term goal	2	
e) Benefits Of energy savings (i.e. avoided costs, payback, improved comfort)	5-6	
2. OUR COMMITMENT		
a) Alignment with the organization's goals	2&4	
b) Stakeholder engagement plan	4-5	
3. UNDERSTANDING THE SITUATION		
a) Organizational Profile	4	
b) EMA Outcome	6-8	
c) BEPI/EUI of buildings in the portfolio	8-10	
d) Explanation of strategy for prioritizing projects (such as target sites with the highest energy consumption, highest BEPI, the highest number of occupants)	11-12	
e) Opportunities / Challenges to be taken into account for the energy management plan	11-12	
4. OUR ACTIONS		
a) Current year project list that outlines kWh saved and cost per project and total for the year (including stakeholder engagement plan)	11-12	
b) Budget approval for the plan (or explanation of how/when funding will be in place)	11-12	
c) Potential projects outlined for the following 1-2 years	17-19	
d) Show how projects contribute to the achievement of energy target	11-12	
e) Progress on 5 EMA critical items	6-8	

6.2. ACRONYMS AND ABBREVIATIONS

AFG	“Annual Facilities Grant”. A fund allocated to each district for annual facility projects is required to maintain facility assets through anticipated economic life and prevent premature deterioration.
CAS	Climate Action Secretariat under BC Ministry of Environment and Parks
CNCP	Carbon Neutral Capital Program. A grant fund is available to school districts.
C.Op.	“Continuous Optimization” - a program of BC Hydro to improve the energy efficiency of existing buildings through a review of operating issues. It is commonly thought of as a ‘tune-up’ for buildings. BC Hydro provides 50% cost-share funding for many of the activities of the program.
EMA	Energy Management Assessment
EUI	“Energy Use Intensity”. A measure of the energy a building uses - on a “per floor area” basis (typically kWh/M ²). EUI is a common energy metric used in building operations. It can include all energy use – heating, lighting, systems, and plug loads- or can be analyzed for one component or fuel only.
EV	Electric Vehicle
ekWh	equivalent kWh. The energy use is converted into kWh for a common presentation as in an EUI value. One GJ of natural gas consumption converts to 278 ekWh.
DDC	Direct Digital Control: A computerized control system for a building.
GHG	Greenhouse Gas
GJ	“Giga Joule” – literally, a billion joules. A measure of energy – most often used with natural gas, propane, or other heating fuels.
HVAC	Heating ,Ventilation and Air Conditioning
KW	kilowatt (thousands of Watts), a measure of how fast energy is consumed
KWh	kilowatt-hour. “thousands” of watt-hours. A measure of energy consumed - but not how fast it is consumed. A kWh is equivalent to 100 Watt light bulbs turned on for one hour.
Lb	Pounds for Paper
LED	Light-Emitting Diode. LED lighting and fixtures.
Power Smart	A program of BC Hydro to encourage energy conservation through education and incentives.
Ministry	Ministry of Environment and Parks, Government of British Columbia
SEP	“School Enhancement Program”. A provincial funding program to help school districts extend the life of their facilities through a wide range of improvement projects, including: Roofing upgrades (i.e., replacement, repair), Exterior Wall System upgrades (i.e., cladding, insulation, windows, building envelope), Interior Construction upgrades (i.e., interior accessibility, flooring, wall partitions), HVAC upgrades (i.e., heating, ventilation, air conditioning), Electrical upgrades (i.e., power supply, distribution systems, fire protection systems), Plumbing upgrades (i.e., washrooms, water fountains, re-piping).
SEMP	Strategic Energy Management Plan. This document.
SD42	Maple Ridge-Pitt Meadows School District. This District.
tCO ₂ e	tonnes of CO ₂ equivalent
W	Watt(W) - a measure of how fast energy is consumed.
MECC	Ministry of Education and Child Care