RICHMOND
SCHOOL DISTRICT NO.38

2022 PSO Climate Change Accountability Report

School District 38
(Richmond)

PART 1. Legislative Reporting Requirements

DECLARATION STATEMENT:

This PSO Climate Change Accountability Report for the period January 1, 2021 to December 31, 2022 summarizes our greenhouse gas (GHG) emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2022 to reduce our GHG emissions, and our plans to continue reducing emissions in 2022 and beyond.

By June 30, 2023, School District 38's final 2021 *Climate Change Accountability Report* will be posted to our website at *www.sd38.bc.ca*.

EMISSION REDUCTIONS: ACTIONS & PLANS

At its Public Meeting of 15 December 2021, the Richmond Board of Education adopted its new District Sustainability & Climate Action Plan (DSCAP). The DSCAP is the strategy the Richmond School District is following to reach our targets of a 50% reduction in greenhouse gas emissions from building sources, and 40% reduction from mobile sources, by 2030 and net zero GHG emissions by 2050.

The DSCAP is part of the District's 2020-2025 Strategic Plan.

STRATEGIC PRIORITY 3
Optimized Facilities and Technology

GOAL 2

The district's facilities are well-maintained, equitable, safe and conducive to learning.

OBJECTIVES

I. Provide equitable learning environments through effective and efficient facilities planning, management and resource allocation.
II. Provide clean, healthy and safe facilities.
III. Implement the 2020 Maintenance Review recommendations to optimize service delivery and improve the quality and timeliness of maintenance to our facilities.
IV. Implement strategic recommendations in the Long-Range Facilities Plan.
V. Work collaboratively with the Ministry of Education to accelerate seismic upgrading of our schools.
VI. Create learning environments that are flexible and support inclusive educational practices.

GOAL 3

The district fosters energy efficient and environmentally sustainable facilities and practices.

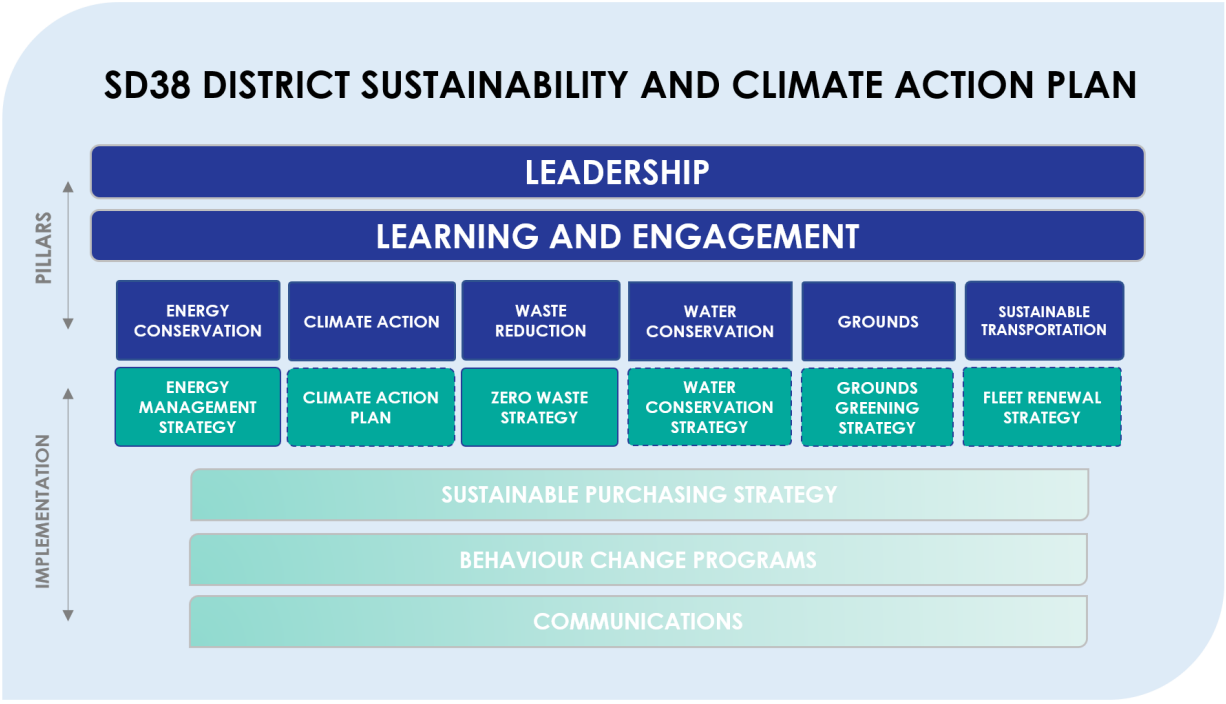
OBJECTIVES

I. Develop and implement a five-year Sustainability and Climate Action Plan.
II. Improve the energy efficiency, climate resiliency and sustainability of all facilities through capital improvements.
III. Implement sustainable practices and programs to improve waste diversion rates, reduce waste generation, reduce greenhouse gas emissions, conserve water and promote climate action.
IV. Increase sustainability education, awareness training and learning opportunities for staff and students.

The DSCAP itself has nine Pillars that guide how the Richmond School District links our core mandate of education with sustainability and climate action. The genesis of these pillars was from the active leadership in environmental stewardship dating back to 2011, and have a number of associated Board policies, regulations, and guidelines:

- Policy 512.14.1 - Environmental Stewardship
- Regulation 512.14.1-R - Environmental Stewardship
- Administrative Guideline 512.14.1-G - Environmental Stewardship
- Administrative Guideline 512.14.1-G - Energy Conservation
- Administrative Guideline 512.14.1-G - Grounds Greening
- Administrative Guideline 512.14.1-G - Sustainable Purchasing
- Administrative Guideline 512.14.1-G - Sustainable Transportation
- Administrative Guideline 512.14.1-G - Waste Management
- Administrative Guideline 512.14.1-G - Water Management

How the pillars interact is shown in the following:



For the 2021-26 period covered by the DSCAP, a summary of overall objectives is as follows:

In 2022, we have achieved a **23% reduction in building** and **22% reduction in fleet emissions**, making good progress in both metrics against our 2030 targets.

A. Stationary Sources - Buildings

In 2022, we maintained the focus of our greenhouse gas (GHG) reduction initiatives on reducing our footprint from our largest emissions source: our buildings. Natural gas consumption in 2022 was lower compared to 2021 as we implemented revised ASHRAE guidance on pre-occupancy ventilation for control of respiratory illnesses.

GHG emissions from buildings result from the fossil fuels consumed to provide heating to schools and other district facilities. These emissions account for the vast majority of the District's overall emissions at 88.2% in 2022, compared to 93.3% in 2021.

Further reductions in natural gas consumption were achieved by:

- Continuous Optimization (C-Op) projects implemented at 10 sites: Boyd, Byng, Kidd, Facilities Services Centre, McNair, McNeely, Palmer, Richmond Secondary, Steveston-London, and Talmey (1,393,290 kWh electricity and 9,090 GJ natural gas saved);
- Implemented two (2) boiler replacement projects to high efficiency condensing boilers at Hamilton and Byng Elementary Schools (858 GJ saved);
- Conducted rooftop unit replacements at McRoberts Secondary;
- Completed Direct Digital Control (DDC) upgrades at McRoberts and Byng;
- Thermal Comfort behavioral campaign to reduce natural gas consumption in 20 schools (15 elementary and 5 secondary), resulting in a 0.7% decrease in natural gas consumption when comparing the "heating season" September to December 2021 versus 2022; and
- LED upgrades implemented at McMath, Ferris, and Mitchell Elementary.

In total, there were 1,582,740 kWh of electricity and 10,400 GJ of natural gas saved, far beyond the annual target reductions of 275,000 kWh/year of electricity and 2,000 GJ/year of natural gas.

As a result, 518 tonnes CO_2 equivalent were reduced, and $12,952 was saved in avoided carbon offset costs.

B. Mobile Sources - Fleet

The use of fossil fuels used to power the District's fleet vehicles, including maintenance vehicles and school buses, results directly in emissions. The fleet accounted for 6% of the District's overall emissions in 2022.

In order to reduce the fleet emissions, there is a two-pronged approach:

- Behavioural – providing training and planning resources to all employees that drive District vehicles on route planning and economic driving techniques.
- Technical – as existing vehicles reach a point where maintenance costs become greater than the cost of replacement, they will be retired in favour of electric vehicles where feasible, or with a more fuel efficient version of the same.

In 2022, Richmond School District received two Type C electric buses from Western Canada Bus, to replace two Type D diesel buses. These buses each have a range of 230 km and are charged using a Level 3 DC 25 kW charger.

As a result of these efforts, the Richmond School District has achieved an increase in our Corporate Average Fuel Economy of 28%.

C. Paper Consumption

Supplies emissions are indirect, originating from the District's use of office paper. In 2022, supplies accounted for 3.3% of the District's overall GHG emissions. Some of the actions taken to reduce paper consumption have included communicating benchmarked data to schools, greater use of electronic means to provide information to students and staff, and defaulting printers to double-sided printing.

D. COVID-19 Impacts on Energy and GHG Performance

During the pandemic, the Richmond School District has focused on ASHRAE recommendations for ventilation as a means to mitigate transmission of respiratory viruses our schools. The District is taking concrete steps to ensure that our students and staff come to school and work each day in a clean, healthy and safe work environment.

The Richmond School District is fully compliant with all school ventilation requirements. The District works closely with, and takes direction from, public health officials to ensure that heating, ventilation, and air conditioning (HVAC) systems are designed, operated, and maintained per Provincial standards and specifications.

In 2022, the following changes were made in response to updated guidance from ASHRAE regarding ventilation and respiratory viruses:

- Continued installation of mechanical ventilation in schools and classrooms currently without mechanical ventilation. This is a continuation of a $12 Million effort that started in 2021 and is expected to be complete by Summer 2023.
- Mechanical ventilation systems are in excellent working order through scheduled filter changes and equipment maintenance.
- Pre-occupancy flush of all buildings for two (2) hours every day during the work week.

E. Plans to Continue Reducing Greenhouse Gas Emissions

In 2023, we are continuing with the District's comprehensive energy conservation program and have a number of energy efficiency projects slated for 2023/24 including:

- Implementation of Continuous Optimization programs at 10 sites: General Currie, DeBeck, Garden City, Grauer, Ferris, Homma, Kingswood, Maple Lane, McKay, and Steves;
- LED lighting upgrade at 2 sites: McRoberts and Byng; and
- The start of a 3-year program to purchase six (6) electric buses (2 x Type A and 4 x Type C), with the support of the federal Zero Emission Transit Fund (ZETF), the Association of School Transportation Services of BC (ASTSBC), Clean BC, the Specialty-Use Vehicle Incentive Program, and BC Hydro's EV Fleet Ready programs. The required infrastructure upgrades at the Facilities Services Centre will be covered by ZETF (50%) and the EV Fleet Ready program (50% upon completion of a fleet electrification and infrastructure upgrade study, recently completed by Prism Engineering).

2022 GHG EMISSIONS AND OFFSETS SUMMARY TABLE

School District 38's 2022 GHG Emissions and Offsets Summary	
GHG Emissions created in Calendar Year 2022	
Total Emissions (tCO_2e)	*6,480*
Total $BioCO_2$	*14.2*
Total Offsets (tCO_2e)	*6,494*
Adjustments to Offset Required GHG Emissions Reported in Prior Years	
Total Offsets Adjustment (tCO_2e)	*0*
Offset Exempt (Mobile Energy Use)	*-147*
Grand Total Offsets for the 2022 Reporting Year	
Grand Total Offsets (tCO_2e) to be Retired	*6,333*
Offset Investment ($25 per tCO_2e)	*$158,325*

RETIREMENT OF OFFSETS:

In accordance with the requirements of the *Climate Change Accountability Act* and Carbon Neutral Government Regulation, School District 38 (Richmond) (**the Organization**) is responsible for arranging for the retirement of the offsets obligation reported above for the 2022 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 Leadership

2A. CLIMATE RISK MANAGEMENT

In March 2019, Richmond City Council declared a climate emergency in response to the urgent call set out by the United Nations' Intergovernmental Panel on Climate Change (IPCC), joining more than 600 cities across the world that have made similar declarations. The City has set the target of reducing GHG emissions in Richmond by 50% by 2030, and net-zero GHG emissions by 2050[1].

In 2021, SD38 added a Climate Action pillar to our sustainability strategy to emphasize the importance of taking bold and swift action to do our part to mitigate the impacts of climate change. We will do this by reducing our emissions, operating low carbon, efficient and climate resilient facilities and schools, and outlining the operational and engagement changes we need to take to meet our climate goals.

We also acknowledge the climate emergency and will develop climate adaptation plans to identify how SD38 can mitigate our climate risks and enhance resiliency of our facilities and operations. In our schools, climate action also needs to be understood as a social justice issue since climate change will impact marginalized populations the most.

Under BC's Carbon Neutral Government Regulation, SD38 is required to track, report and offset greenhouse gas (GHG) emissions each year. As the majority of our emissions come from using natural gas to heat district buildings, reducing building related emissions is our major priority. Fleet emissions represent a smaller portion of our emissions and are addressed through our Sustainable Transportation Strategy. With the provincial carbon tax scheduled to rise in $25 per year increments until 2030, reducing our carbon emissions will not only help us mitigate our climate impact but will also result in cost savings for the District.

The impact of climate change increases the following risks for Richmond residents:

- More severe and more frequent flooding
- Increased demand on City drainage and sewage systems
- Loss of critical shoreline ecosystems
- Increased health risks caused by exposure to wildfire smoke
- Increased risk of heat stress and heat stroke
- Increased frequency and severity of summertime water restrictions
- Increased likelihood of wildfires

- *Information via City of Richmond*

[1] https://www.richmond.ca/sustainability/climate/climateleadership.htm

We also aim to provide educational opportunities to staff, educators, and students on climate change and how to take action on climate change, incorporating these important concepts into the curriculum and into staff training opportunities.

In 2022, the District conducted Climate Change Risk Assessments at eight (8) sites in the District. Using the localized climate change projections through 2050, each facility was evaluated for actions to improve resiliency, service continuity, and embedding climate change into the Long Range Facilities Plan and District policies and regulations.

2B. OTHER SUSTAINABILITY INITIATIVES

The Richmond School District continues to create and support the necessary structures for an integrated, system-wide approach to environmental sustainability through the work of the **Richmond Sustainability Advisory Committee (RSAC)**, comprised of representatives from all stakeholder groups.

- The **RSAC** is a district advisory group made up of stakeholders from across the organization, including students, parents, educators, senior leadership and District staff.
- **Eco Cafés**: These meetings are meant to showcase the good work that Green and Eco Teams do with respect to sustainability and provide opportunities for schools to connect with each other in order to foster additional collaboration.

Meeting quarterly, the Energy and Sustainability Team reports on SD38's progress on its sustainability and climate action goals and solicits feedback on other initiatives that should be considered. Through our 'Eco-Wise' program, we continue to work towards embedding environmental stewardship in the day-to-day operations of the District, and to incorporate Environmental Stewardship into the school curriculum and into the delivery of each employee's core mandates. The last RSAC meeting was held in April 2023.

The last Eco Café was held in November 2022 and featured the efforts of Richmond Secondary and Ferris Elementary and their Miyawaki Pocket Forest concept. Of note was the use of a variety of plant and tree species that was informed by First Nations perspectives, as well as species that are current in Oregon state. This is to account for a changing climate and the anticipated increase in average temperatures over the next 30 years.

Inspired by the Environmental Stewardship Policy and guided by the DSCAP, multiple sustainability initiatives leading by teachers and students have been implementing at schools:

1. **School-based Green and Eco Teams**: through the annual Eco-Wise grants funding by the Energy and Sustainability team, schools would undertake ownership of various sustainability initiatives. A number of activities are undertaken by school-based Green and Eco Teams, including:

- *Outdoor Learning Space upkeep*: recently presented to the Facilities and Buildings Committee, this is an initiative to work with school Green and Eco teams to teach them how to maintain these spaces, especially when the teacher who initiated them moves to another school. The intent is to provide continuity of approach culture across schools in maintaining these spaces, as teachers move around, and students graduate.
- *Energy Wise Network activities*: as part of the Eco-Wise grants, Green and Eco Teams were asked to help with behaviour change campaigns that focus on energy conservation. The Energy-Wise Network is a program, jointly funded by BC Hydro and Fortis BC, works with participating organizations to promote sustainable behaviours. Activities include: Holiday shutdowns (unplugging devices), BRR Days (sweater days when we lower the temperature in a school, in coordination with the HVAC team), Litter-less Lunches, and "Dining in the Dark" (turn out the lights).

2. **Green Ambassadors program**: run in conjunction with the City of Richmond, Green Ambassadors are volunteers who work at large community events to help the community appropriately sort their waste at these events. It has since morphed into a monthly meeting that is part training, part students presenting on various sustainability topics of interest each month. We present a District update, and answer questions students may have about all things sustainability that the District is doing.

3. **Zero Waste Strategy**: We have been implementing a full waste management program comprising district-wide organics and recyclables collection in our schools and administrative buildings. Paper towel is now collected like other organic wastes, all are being separated and diverted from the landfill to become 'class A' compost in all of our facilities. Refundable beverage container collection program for schools were widely implemented as well.

4. **Utilities Management**: We have Prism Utility Monitoring & Analysis Software (PUMA), a web-based utility monitoring software that provides actionable insights for energy, water and greenhouse gases management across a large portfolio of 54 buildings in our district.

   Internal benchmarked energy, paper, and water consumption data have been shared with staff and students to engage them to reduce carbon and water footprint.

5. **Continuous Optimization:** With support from BC Hydro, Richmond School District regularly completes evaluation of the HVAC systems, settings, and associated systems to ensure proper operation. These low-cost, high impact projects saved over 1.34 million kWh and 9,000 GJ of natural gas through optimizing building automation systems, settings, and low-cost maintenance activities.

2C. SUCCESS STORIES

Thermal Comfort Campaign Part 2

In the summer 2021, the District was awarded up to $6,770 from FortisBC for the development of a new thermal comfort campaign to reduce natural gas consumption in 6 pilot buildings. The fund was used to develop the campaign materials and communication plan, and leverage on this success to expand the program across the district. Conservatively, this campaign was helped to save 3.5% of natural gas, which is equivalent to 162 GJ. This amount is enough to heat a typical elementary school in one and a half months.

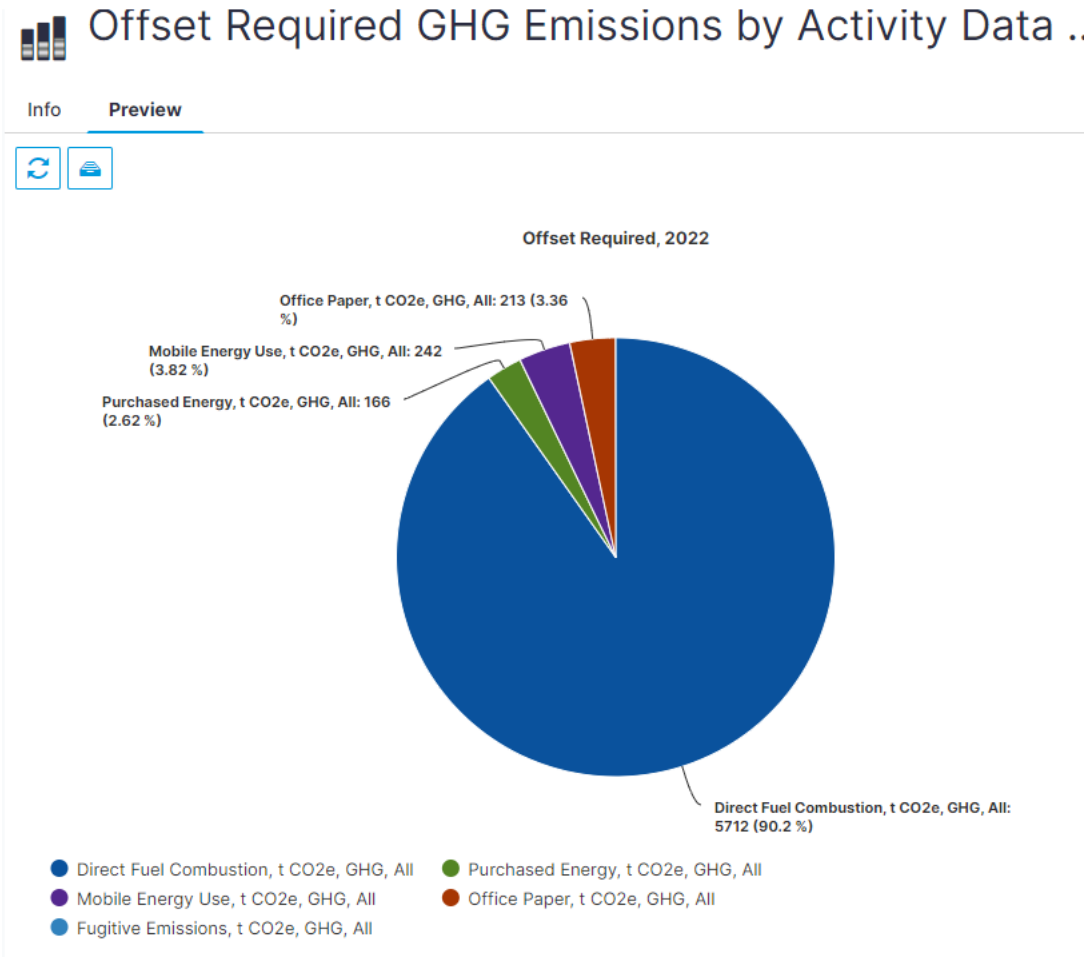
In 2022, the District expanded the program to 20 schools (5 secondary and 15 elementary), focusing on the start of the heating season. We were able to achieve a reduction in natural gas consumption of 0.7% (not as much as planned, due to the unseasonably cold fall and winter), and a 10% reduction in HVAC complaints, due to better understanding by building occupants on how the heating systems worked in their schools.

Executive Sign-off:

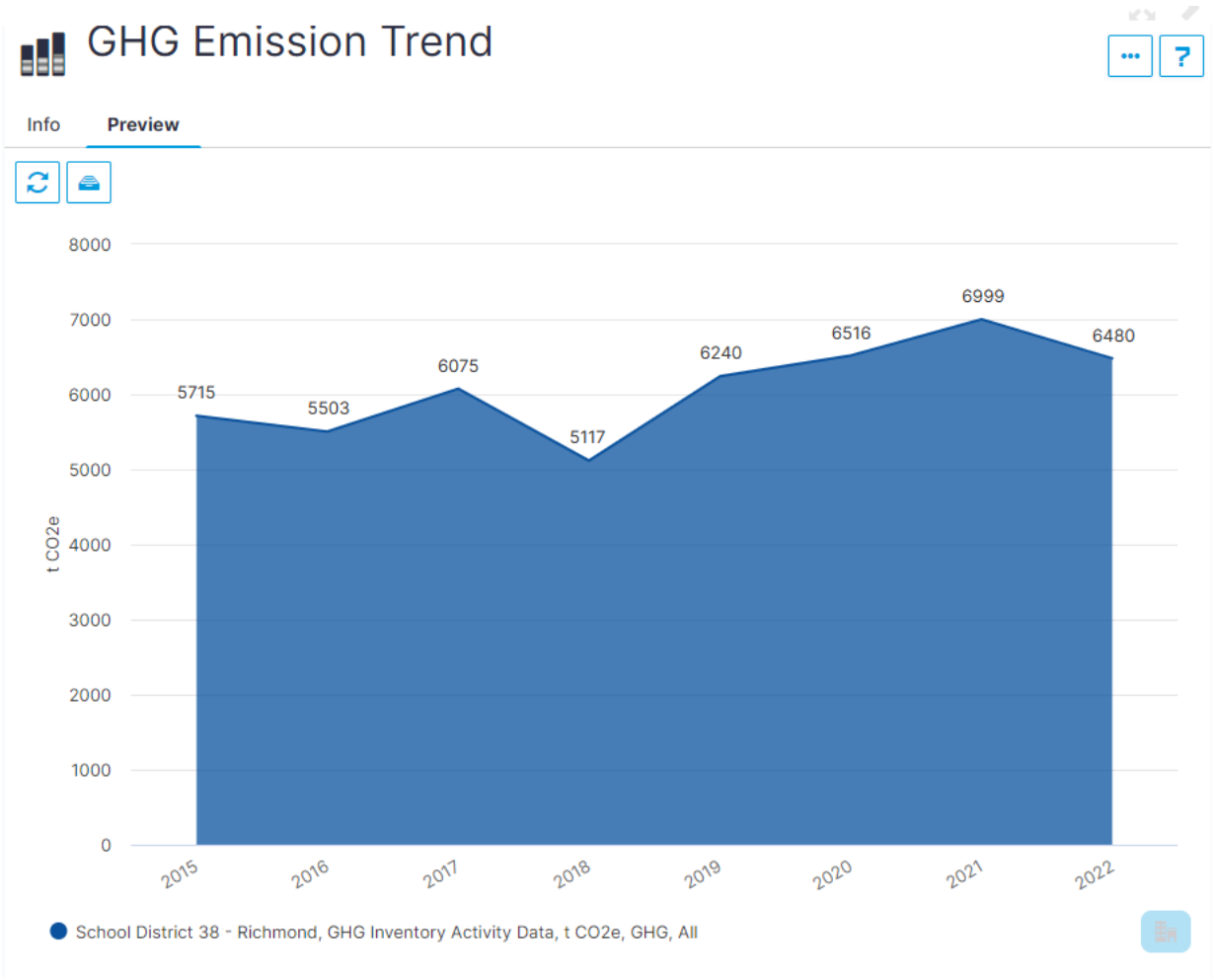
Signature Cindy Wang Date May 30, 2023

Cindy Wang **Secretary Treasurer**
Name (please print) Title

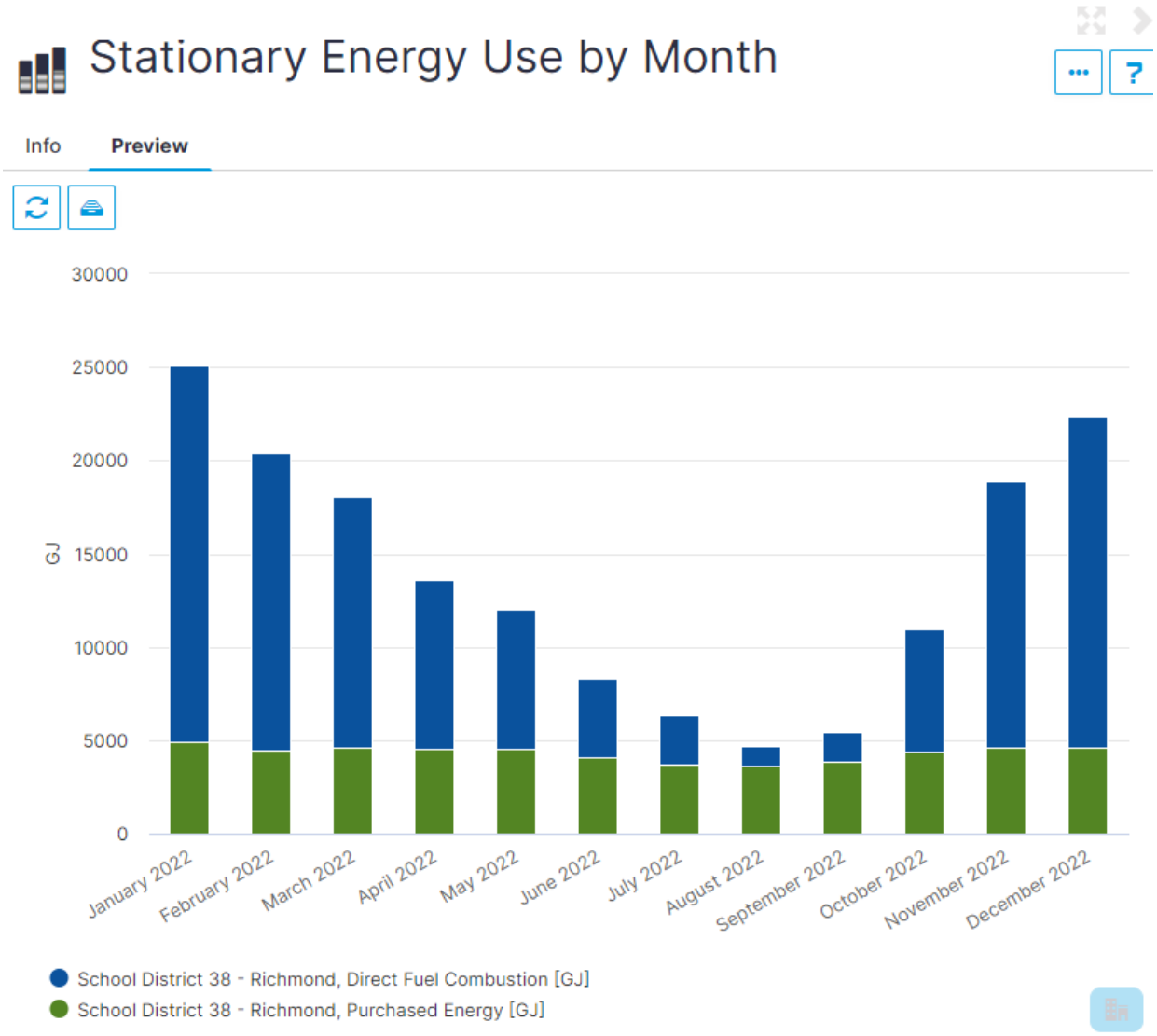
Appendix A: GHG Emissions Offset required in 2022



Appendix B: GHG Emissions Trend



Appendix B: Stationary Energy Use by Month, 2022



Appendix C: Station Energy Use Trend, 2022