



# 2020 PSO Climate Change Accountability Report

# 2020 PSO Climate Change Accountability Report

## School District #38 (Richmond)

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

By June 30, 2021, School District #38's final 2020 *Climate Change Accountability Report* will be posted to our website at [www.sd38.bc.ca](http://www.sd38.bc.ca).

## Overview

On behalf of the Board of Education, School District 38 (Richmond), I am pleased to submit our Climate Change Accountability Report for 2020. Now in our eleventh year of being carbon neutral, energy savings and greenhouse gas emissions reductions remain a priority in our ongoing commitment towards carbon neutrality. We continue to work diligently, as we have many years now, to reduce our greenhouse gas emissions while improving the learning environment for students and staff.

In 2020, we maintained the focus of our greenhouse gas (GHG) reduction initiatives on reducing our footprint from our largest emissions source: our buildings. The Richmond School District has a robust energy management program with aggressive targets and a forward-looking plan to reduce energy consumed in our buildings. However, natural gas consumption in 2020 was increased due to the increased ventilation requirement as a measure to prevent Covid-19. This increasing trend is expected to continue in 2021.

As part of our 2020 energy conservation program, we undertook several projects that have large energy and carbon reduction benefits. We completed four boiler replacements at Palmer Secondary, Tait, McKinney and Westwind Elementary, two rooftop unit replacements at Burnett Secondary, and installed two on-demand water heater units at Tait Elementary. We also successfully completed a major LED lighting upgrade at Cambie Secondary and Kingswood Elementary. Additionally,

we completed two pneumatic control conversions to DDC at Boyd Secondary and Tait Elementary.

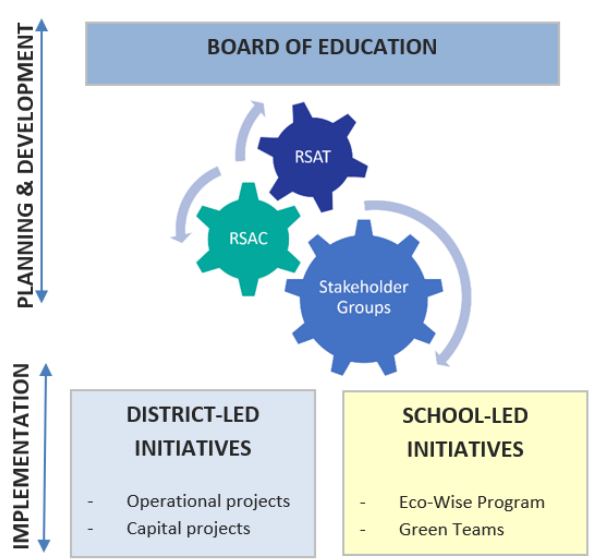
In 2020, Richmond School District's efforts to reduce energy consumption earned an Efficiency in Action Award from FortisBC. Specific efforts taken by the school district include installing a solar wall at McMath Secondary School and four gas absorption heat pumps at both Richmond and Cambie Secondary School.

Our Board-approved Strategic Plan is a five year vision for the Richmond School District. Strategic Priority 3, Goal 3 speaks specifically to our Sustainability and Climate Action goals:

## STRATEGIC PRIORITY 3 Optimized Facilities and Technology

**Goal 3**  
The district fosters energy efficient and environmentally sustainable facilities and practices.

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



Our commitment to sustainability is underpinned by five principles: collaboration, continuous improvement, commitment to the triple bottom line, leadership and learning for all. We continue to create and support the necessary structures for an integrated, system-wide approach to environmental sustainability through the work of the Richmond Sustainability Action Team (RSAT) and the Richmond Sustainability Advisory Committee (RSAC), comprised of representatives from all stakeholder groups.

Through the actions of our site-based Green Teams, we are making great strides. We will maintain our efforts in educational programs for sustainability to give our students and staff a better understanding of the necessary practices in our operations and facilities for a better and a more sustainable future.

## Emissions and Offsets Summary

### Richmond School District #38 2020 Climate Change Accountability Report

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

By June 30, 2021, Richmond School District #38 final *Climate Change Accountability Report* will be posted to our website at [www.sd38.bc.ca](http://www.sd38.bc.ca)

#### Emissions and Offset Summary Table:

Richmond School District #38 2020 GHG Emissions and Offsets	
<b>GHG Emissions created in Calendar Year 2020</b>	
Total Emissions (tCO <sub>2</sub> e)	6,109
Total BioCO <sub>2</sub>	15.29
Total Offsets (tCO <sub>2</sub> e)	5,953
<b>Adjustments to Offset Required GHG Emissions Reported in Prior Years</b>	
Total Offsets Adjustment (tCO <sub>2</sub> e)	1,062
<b>Grand Total Offsets for the 2020 Reporting Year</b>	
Grand Total Offsets (tCO <sub>2</sub> e) to be Retired for 2020 Reporting Year	7,015
Offset Investment (\$25 per tCO <sub>2</sub> e)	\$175,375

**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 2020 calendar year, together with any adjustments reported for past calendar years. 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:**

Signature:

Date: May 26, 2021

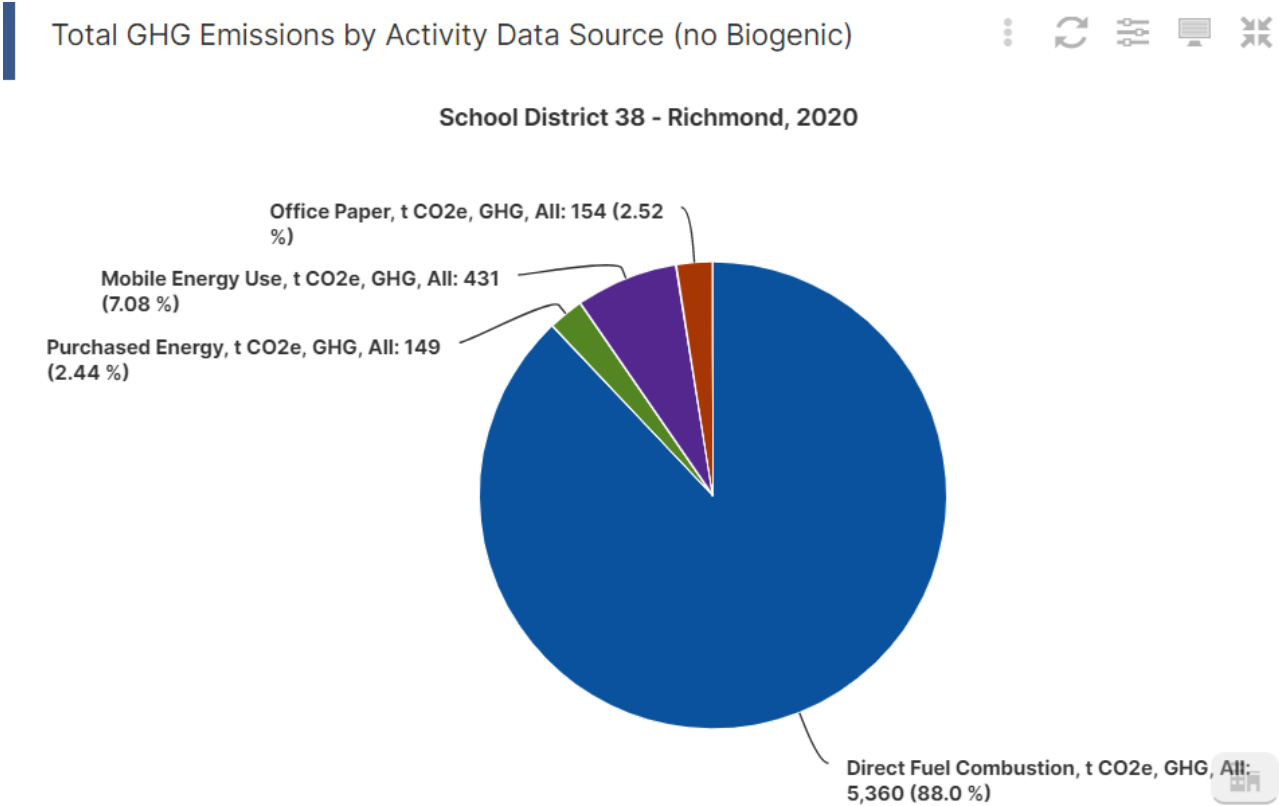
Name (please print): Roy Uyeno

Title: Secretary Treasurer

# Greenhouse Gas Emissions & Total Offsets Required

## Greenhouse Gas Emissions:

Richmond School District #38 Total Greenhouse Gas Emissions in 2020 were 6,109 tonnes of CO<sub>2</sub> equivalent (tCO<sub>2</sub>e) including 15.29 tonnes of BioCO<sub>2</sub>. No-Biogenic Greenhouse Gas Emissions in 2020 were 6,094 tCO<sub>2</sub>e, which are represented in the graph below.



## Offsets applied to become Carbon Neutral in 2020:

Of the above emissions, there was 141 tCO<sub>2</sub>e exempted due to biogenic fuel used by the fleet, so there were 5,953 tCO<sub>2</sub>e offsets required in 2020. In addition, a total offsets adjustment in 2019 were 1,062 tCO<sub>2</sub>e. As such, the Grand Total Offsets (tCO<sub>2</sub>e) to be retired for 2020 Reporting Year are 7,015 tCO<sub>2</sub>e.

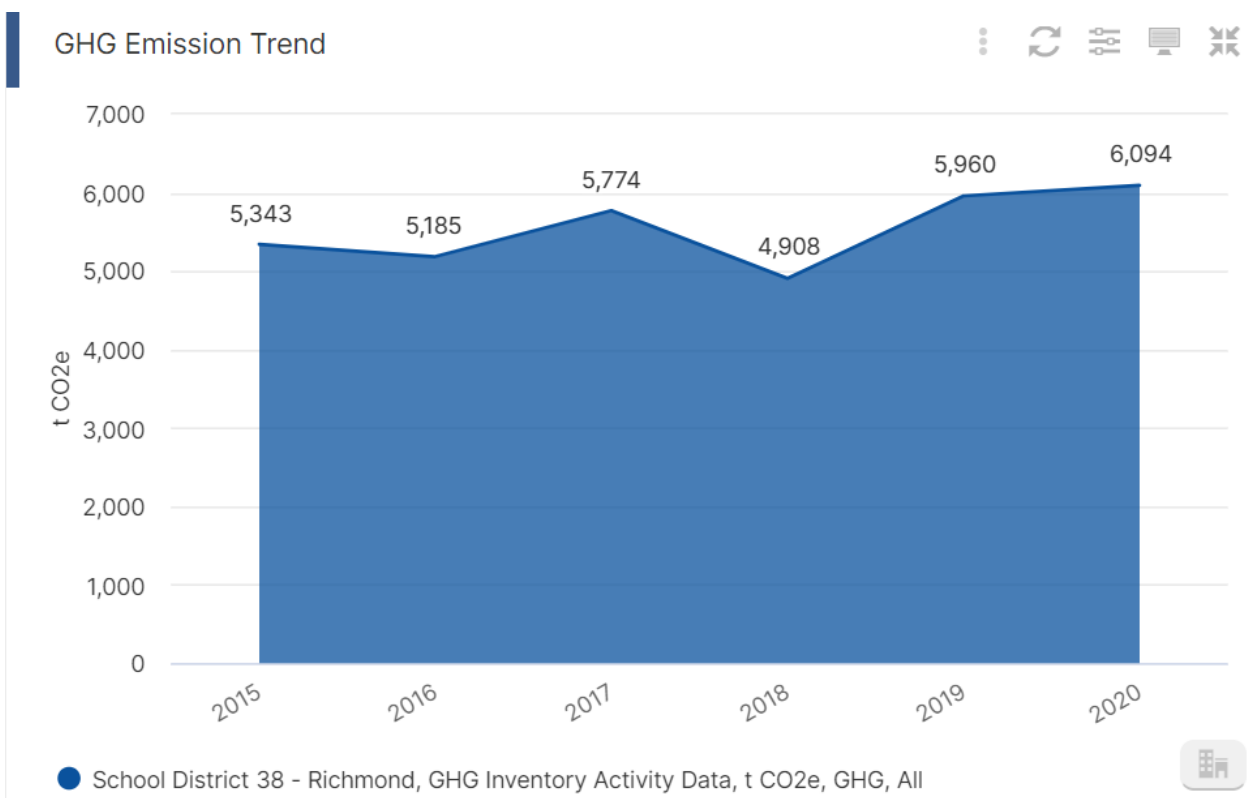
An offset investment of **\$184,143.75** (GST included) is required to be deemed Carbon Neutral.

Please refer to the Appendices for more Energy and GHG Emissions data.

## 2020 Greenhouse Gas Emissions & Trend

The Richmond School District (herein, "the District") has calculated its 2020 carbon footprint, in accordance with the Greenhouse Gas Reduction Targets Act, to be 6,094 tonnes of CO<sub>2</sub> equivalent (excluding Biogenic emissions).

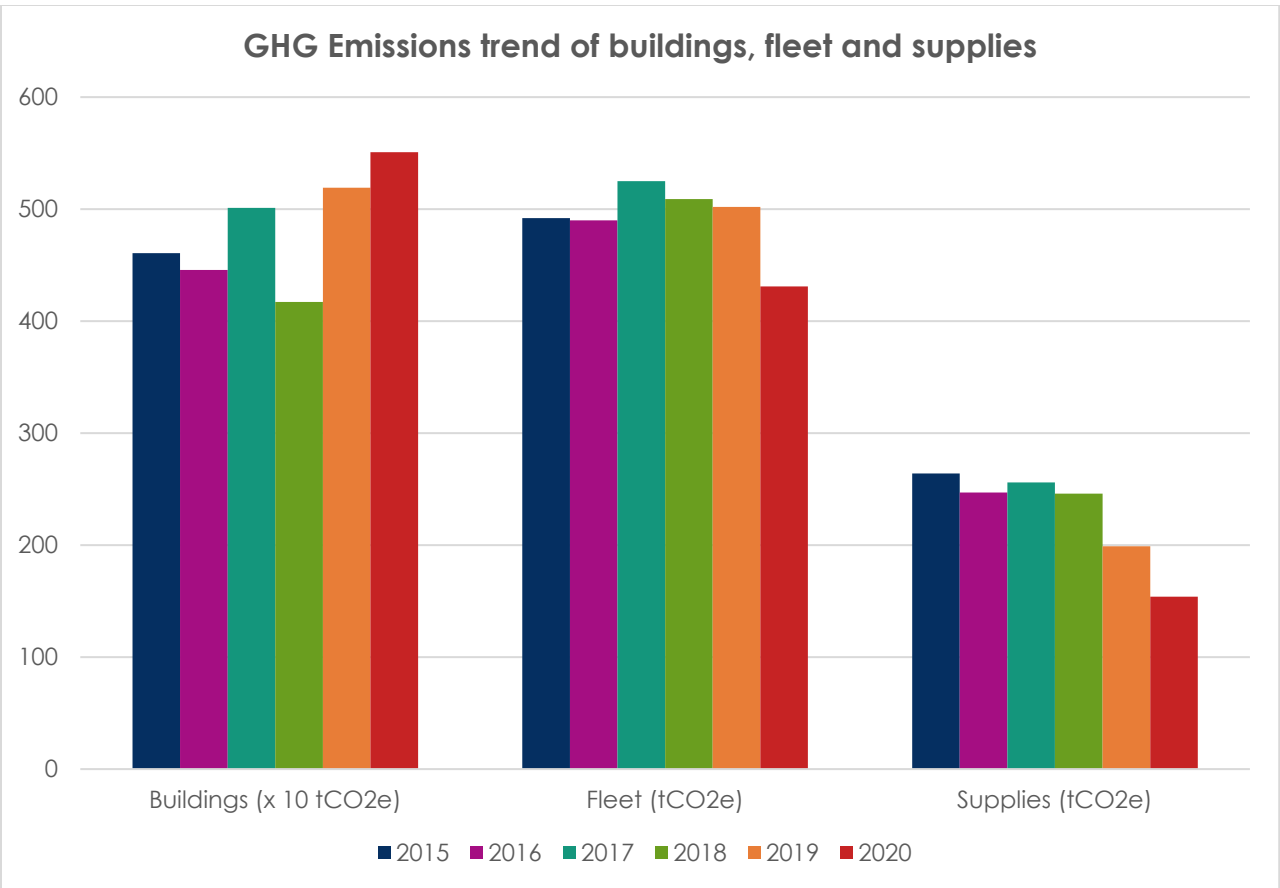
In total, the Greenhouse Gas Emissions in 2020 increased by 134 tonnes of CO<sub>2</sub> equivalent in comparison with 2019. The following graph shows the District's emissions over the past six years.



The increase of GHG emissions in building was driven by the increase in outdoor air volumes to meet ASHRAE ventilation recommendations for Covid-19 prevention in the schools and workplaces. Due to high ventilation, the natural gas consumption in the heating season was increased, resulting an increase in GHG emissions.

The following graph show the District's emissions from each sources over the past six years.





### Buildings



GHG emissions from buildings result from the fossil fuels consumed to provide heating and cooling, ventilation, and electricity to schools and other district facilities. These emissions account for a large majority of the District's overall emissions at 90.4% in 2020.



## Fleet



The use of fossil fuels used to power the District's fleet vehicles, including maintenance vehicles and school busses, results directly in emissions. The fleet accounted for 7.1% of the District's overall emissions in 2020. It has decreased 14% in comparison with 2019, and has decreased continuously since 2017. The district has added 3 EVs to our fleet system, resulting a total of 13 EVs as of 2020.



In 2020, 2 Level-2 charging stations were installed at the School Board Office, bring the total number of Level-2 charging stations to 10.

## Supplies



Supplies emissions are indirect, originating from the District's use of office paper. In 2020, supplies accounted for 2.5% of the District's overall GHG emissions. It has decreased 23% in comparison with 2019, and has decreased continuously since 2017, similar to the fleet. Some of the actions taken to reduce paper consumption have included communicating benchmarked data to schools and defaulting printers to double-sided printing.

## Fugitive Emissions



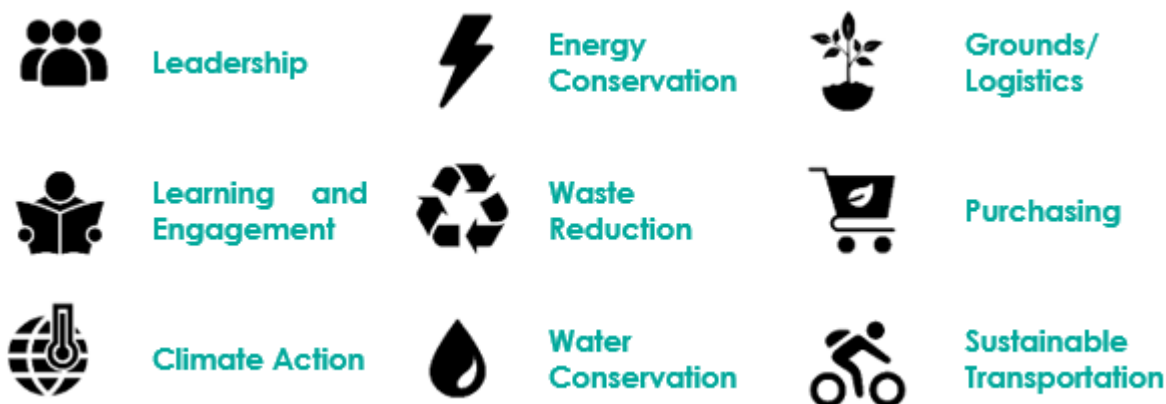
As outlined in the *Carbon Neutral Government Regulation of the Greenhouse Gas Reductions Targets Act*, certain types of emissions are out-of-scope for reporting:

- Gases used for research purposes (e.g. science labs)
- Type R-22 coolant from stationary air conditioning and refrigeration units in schools
- Any emission sources that comprise less than 1% of the district's total GHGs

We estimate that in-scope fugitive emissions (HFCs released to the environment from leaks in cooling equipment) do not comprise more than 0.1% of the District's total emissions and an ongoing effort to collect or estimate emissions from this source would be disproportionately onerous. For this reason, we deem emissions from these sources to be out-of-scope and have not included it in the District's total greenhouse gas emissions profile.

## Emissions Reduction Activities

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. As defined by its Environmental Stewardship Policy, the District's sustainability plan covers nine focus areas:



With the assistance of the Richmond Sustainability Advisory Committee (RSAC), comprised of representatives from all stakeholder groups, the District continued to work towards its long-term sustainability vision by developing the Zero Waste Strategy and the Sustainability and Climate Action Plan, and implementing the short-term goals for each of the nine focus areas. We have implemented a number of short-term goals in 2020 resulting in some considerable achievements:

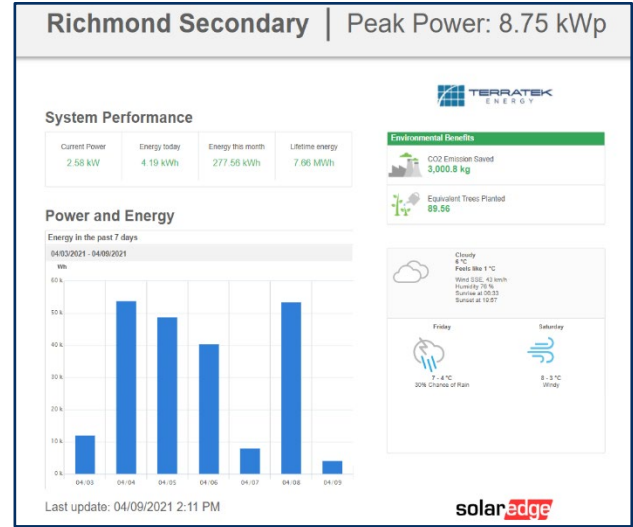
- In 2020, Richmond School District earned an Efficiency in Action Award from FortisBC by its efforts to reduce energy consumption and greenhouse gases emissions. Specific efforts taken by the school district include installing a solar wall at McMath Secondary School and four gas absorption heat pumps at both Richmond and Cambie Secondary School.
- Continued to execute the district-wide Zero Waste Strategy since September 2019, including updated the signages, conducted a waste audit at



Diefenbaker Elementary, and ran the Zero Waste Campaign at 20 schools.

- Continued to implement 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. Refundables collection program for schools were widely implemented in 2020 as well.
- Additional new raised garden beds have been built to a total of 326 units at 35 schools as of 2020. There are 40 Schools have Outdoor Learning Spaces.
- Shared internal benchmarked energy, paper, and water consumption data, engaging staff to reduce their carbon and water footprint.
- Continued with district-wide awareness programs that support both staff and students in implementing behavior change campaigns to target energy conservation.
- Launched Garden classroom to educate teacher towards outdoor learning activities, and registered as a member of the Richmond Garden Club that allows all students to learn all about gardening.
- Continued to develop our relationship with a wide range of external stakeholders, including City of Richmond, Fortis BC, BC Hydro, BC Green Games, David Suzuki Foundation, and Translink.
- Thanks to the approval of Board of Education for the Solar Energy Initiatives, a rooftop solar power generation system with 24 solar panels (8.28 kW capacity) was installed successfully at the Richmond Secondary in 2020. This is the second solar power generation system at the district, after the first system at McNair Secondary that was installed in 2012 with 16 solar panels.





Our carbon neutral objectives and GHG reduction endeavours are inextricably linked to our environmental stewardship initiatives. Of the eight Environmental Stewardship focus areas, Energy Conservation presents the greatest opportunity for both GHG reductions and financial savings given that the largest proportion of the District's GHG emissions is from energy use in buildings. Thus, the largest proportion of our GHG reduction initiatives focus on energy conservation within our schools and administrative facilities.

- Implemented four boiler replacement projects to high efficiency condensing boilers at Palmer Secondary, Tait, McKinney and Westwind Elementary
- Installed two on-demand water heater units at Tait Elementary
- Implemented two pneumatic control conversions to DDC at Boyd Secondary and Tait Elementary
- LED lighting upgraded at Cambie Secondary and Kingswood Elementary, following the success of the similar upgrade at Burnett Secondary, Whiteside, MacNeill and McNair Secondary
- Installed a Solar Power generation system at Richmond Secondary
- Finished the replacement of 14 rooftop units at Burnett Secondary
- Continued to execute regular duct and HVAC coil cleaning at various sites
- Continued to tie in corridor lighting with alarm panels so that all interior lighting can be automatically turned off when building security system is armed.



## Plans to Continue Reducing Greenhouse Gas Emissions

We are continuing with the District's comprehensive energy conservation program and have a number of energy efficiency projects slated for 2021/22 including:

- Implementation of pneumatic control conversions to DDC at 6 sites: Currie, DeBeck, Diefenbaker, Garden City, Grauer and Wowk Elementary
- Implementation of Continuous Optimization programs at 6 sites: Burnett, Cambie, McMath, McNeill, McRoberts Secondary, and Brighthouse Elementary
- LED lighting upgrade at Richmond Secondary, Westwind and Hamilton Elementary, Steveston-London Secondary and School Board Office
- Rooftop unit replacements at McRoberts, Quilchena, McNair and Palmer
- Boiler replacements to high efficiency condensing boilers at Sea Island, Tomsett, Wowk and Spul'u'kwuks Elementary
- Operate the Carbon Capture System installed at the Administration Building as a pilot project in collaboration with FortisBC
- Continue to execute regular duct and HVAC coil cleaning at various sites
- Launch the 5-year District Sustainability and Climate Action Plan (DSCAP)

## Achieving Carbon Neutrality

In 2020, we were carbon neutral with respect to our operations for the eleventh year in a row. We achieved this through our commitment to reducing energy consumption in our buildings, paper consumption, fleet travel emissions, and by purchasing offsets for the remaining emissions.

In order to become carbon neutral for 2020, the Board of Education of School District 38 (Richmond) purchased carbon offsets from the Pacific Carbon Trust for 7,015 tonnes of CO<sub>2</sub>e.

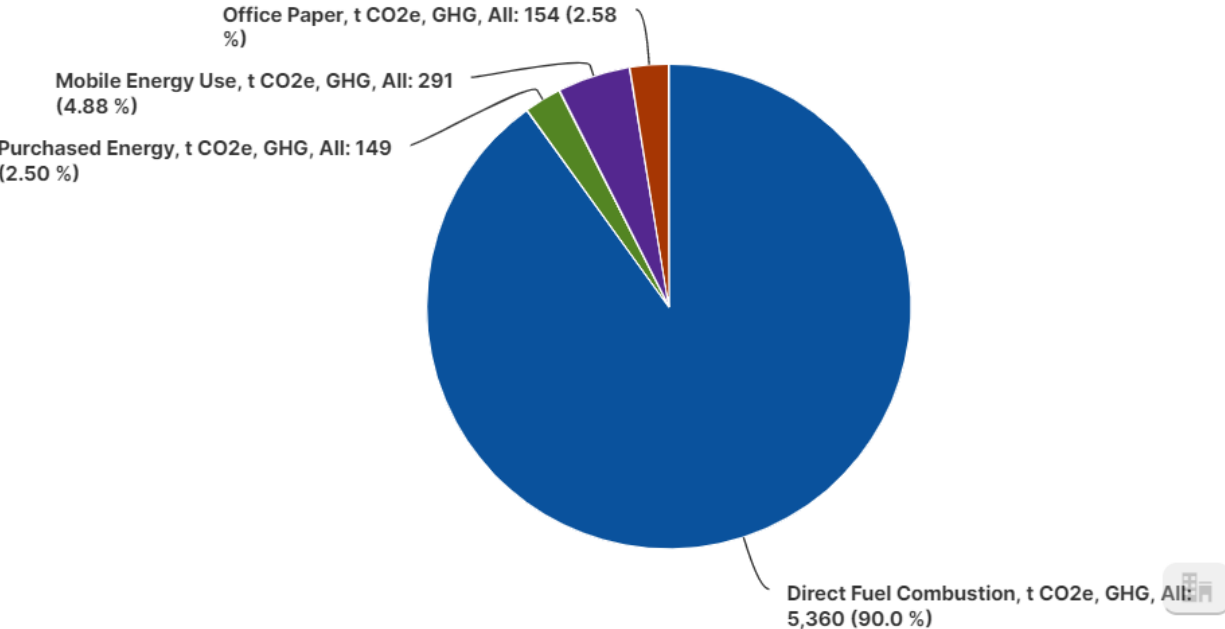
As required by Section 5 of the Carbon Neutral Government Regulation, 141 tonnes CO<sub>2</sub>e of emissions resulting from the operation of school buses were reported as part of our greenhouse gas emissions profile in 2020. These emissions from school buses were not offset as they are out-of-scope under section 4(2)(c) of the Carbon Neutral Government Regulation.

# Appendix A: GHG Emissions offset required in 2020

Offset Required GHG Emissions by Activity Data Source (no Bi...



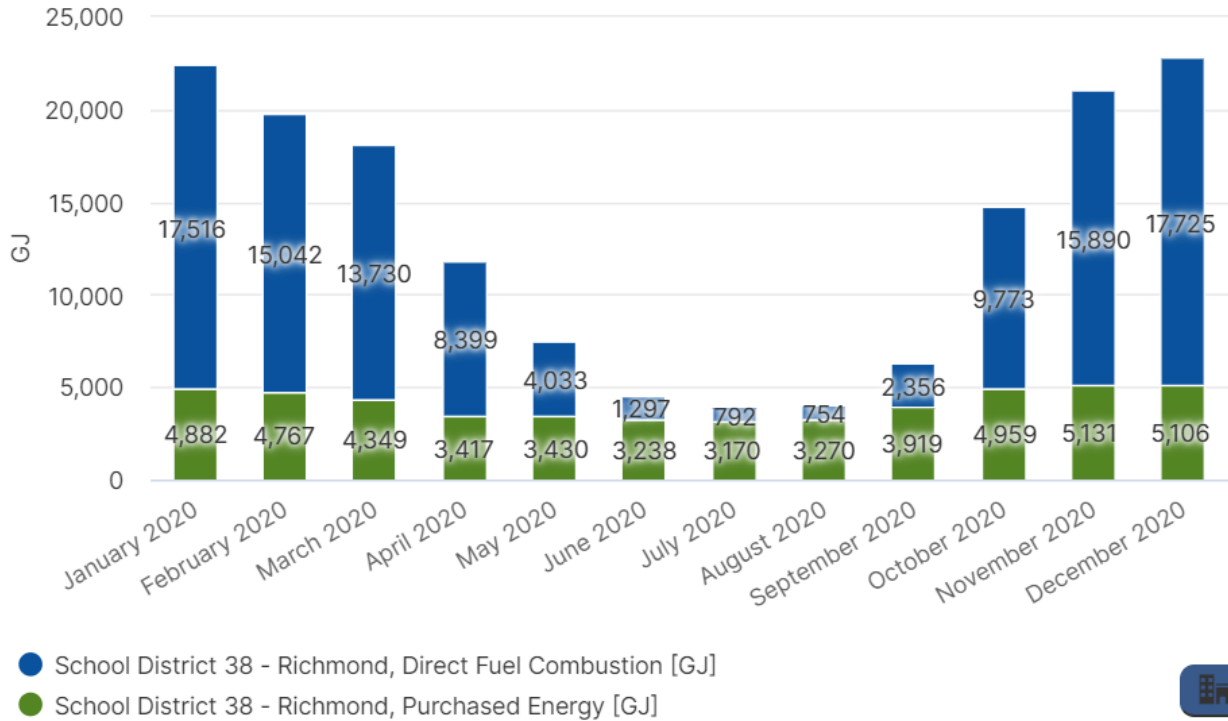
Offset Required, 2020





## Appendix B: Stationary Energy Use by Month, 2020

Stationary Energy Use by Month



# Appendix C: Station Energy Use Trend

