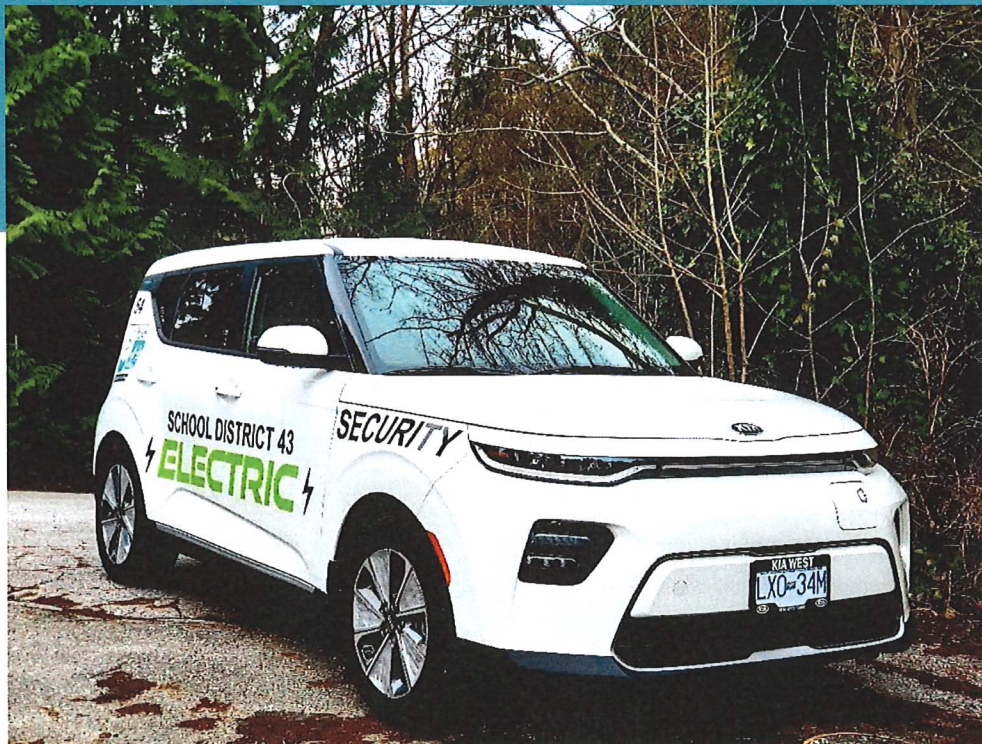


School District No. 43 (Coquitlam) 2020 Carbon Neutral Action Report



District's first Electric Fleet Vehicle

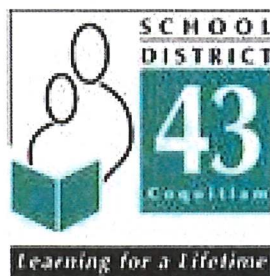


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EXECUTIVE SUMMARY

This Carbon Neutral Action Report for the period January 1st, 2020 to December 31st, 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.

Over the last few years, there has been increased interest and excitement by our Board of Education to consider climate change and sustainability as a District priority. The education of staff, students, and parents on the impact of our behaviors around energy consumption and conservation have become integrated into our daily actions. The Coquitlam School District continues to fully support BC Climate Action Legislation and the targets established by the Greenhouse Gas Reduction Targets Act of 2007. We have established a culture of awareness and action and have worked diligently to reduce our carbon footprint through multiple means. The increasing financial and environmental costs of utility consumption, waste management, fuel and paper consumption remain a concern for our District leaders. Energy conserving strategies implemented should not compromise indoor thermal comfort, lighting levels or air quality; it is the responsible management of these resources that makes the difference.

Coquitlam School District began taking comprehensive action against climate change by promoting environmentally sustainable designs for all schools. Our ongoing goal of reducing our overall energy consumption by 3% annually providing significant cost savings to the District and financing further energy conservation projects. Since 2010, total GHG emissions in SD43 have dropped by 36 %.

Through the work of staff, students and our larger community, Coquitlam School District will continue to implement further changes addressing climate action targets and will pursue carbon neutrality through its core beliefs and principals to develop and maintain safe, inclusive and socially responsible learning communities.

Our sustainability mandate continues to be based on District guidelines that contribute to our overall goals of energy management and environmental sustainability. Some of the key objectives in our District guidelines are:

- Educate students and staff on energy consumption, carbon footprint, and the moral imperative
- Engage students and staff in climate action programs to promote sustainable behavior
- Support projects to reduce energy consumption and our carbon footprint
- Participate in the design of new buildings to ensure the implementation of up-to-date sustainable design practices
- Maintain a well-represented SD43 Executive Green Committee that works closely with executive management

This year has been slightly different compared to previous years due to a Global Pandemic (COVID-19). However, the district has continuously worked towards its commitment to reduce its carbon footprint.

DECLARATION STATEMENT

This Carbon Neutral Action Report for the period January 1st, 2020 to December 31st, 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.

SD43 EMISSIONS AND OFFSET SUMMARY TABLE 2020:

For the year 2020, our total emissions were 7,441 tCO₂e. Of those emissions, 11.5 tCO₂e were from low-carbon biogenic mobile equipment fuels which do not require an offset payment. This means that for the 2020 calendar year, 7,429 tCO₂e of offsets are required.

Please note that in 2019 due to Covid-19 complications the District was instructed to submit based on 2018 which generated an understatement of 401 tCO₂e that has now been made up in the adjustments in 2020.

<i>Coquitlam School District (#43) GHG Emissions and Offset for 2020 (tCO₂e)</i>	
GHG Emissions created in Calendar Year 2020	
Total Emissions (tCO ₂ e)	7,441
Total BioCO ₂	11.5
Total Offsets (tCO ₂ e)	7,429
Adjustments to GHG Emissions Reported in Prior Years (2019)	
Total Emissions (tCO ₂ e)	401
Total Offsets (tCO ₂ e)	401
Grand Total Offsets for the 2020 Reporting Year	
Grand Total Offsets Required (tCO ₂ e)	7,830
Total Offset Investment (Grand Total Offsets Required X \$25/tCO ₂ e)	\$ 195,750

RETIREMENT OF OFFSETS

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, The Coquitlam School District No. 43 (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 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

June 1, 2021

Date

Chris A. Nicolls
Secretary-Treasurer / CFO
School District No. 43 (Coquitlam)

Name (please print)

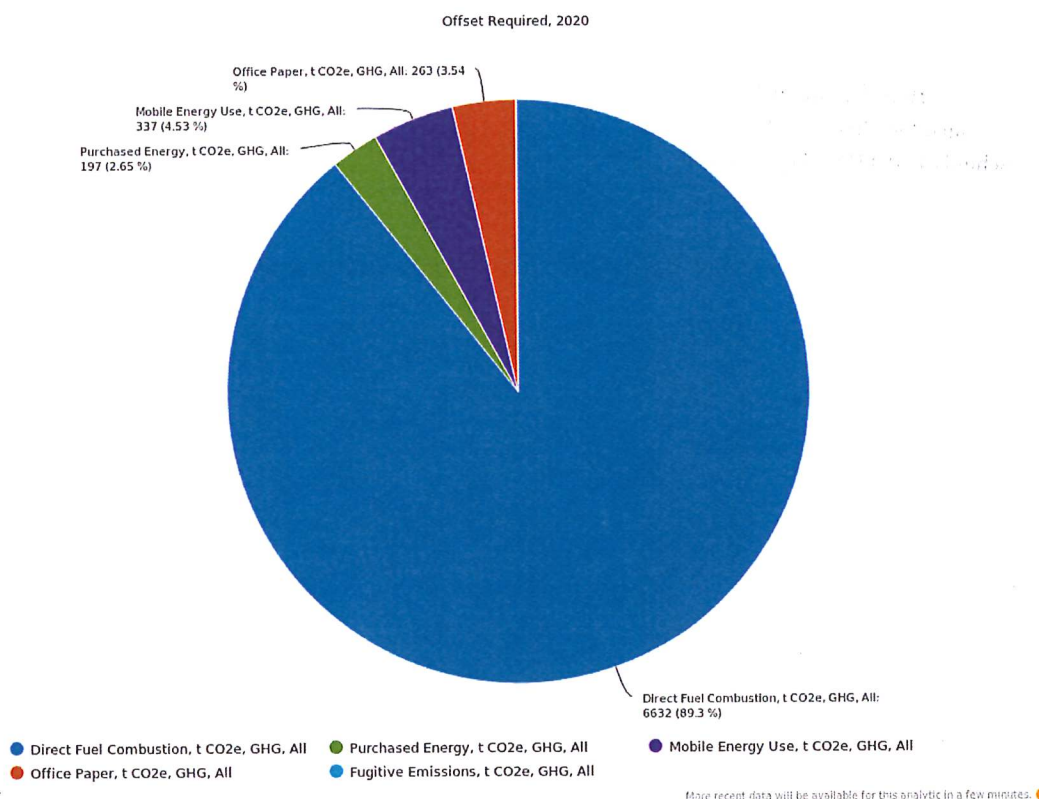
Title

**Signature by senior official such as CEO, COO, Secretary Treasurer or Super Intendent*

GREENHOUSE GAS EMISSIONS SOURCE BREAKDOWN

The chart below shows the breakdown for the Greenhouse Gas Emissions by source in 2020 at SD43.

School District 43 - Coquitlam Greenhouse Gas Emissions by Source for the 2020 Calendar Year (tCO₂e*)



Total Emissions: 7, 429 tCO₂e

Offsets Applied to Become Carbon Neutral in 2020 (Generated on May 10, 2021 1:09 PM)

*Tonnes of carbon dioxide equivalent (tCO₂e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

** Under the *Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act*, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.

OFFSETS APPLIED TO BECOME CARBON NEUTRAL IN 2020

Total offsets required for 2020 including adjustments are 7,830 tCO₂e. At the government offset price of \$25/tCO₂e, the total offset investment is \$195,750 which allows the District to achieve carbon neutrality for 2020.

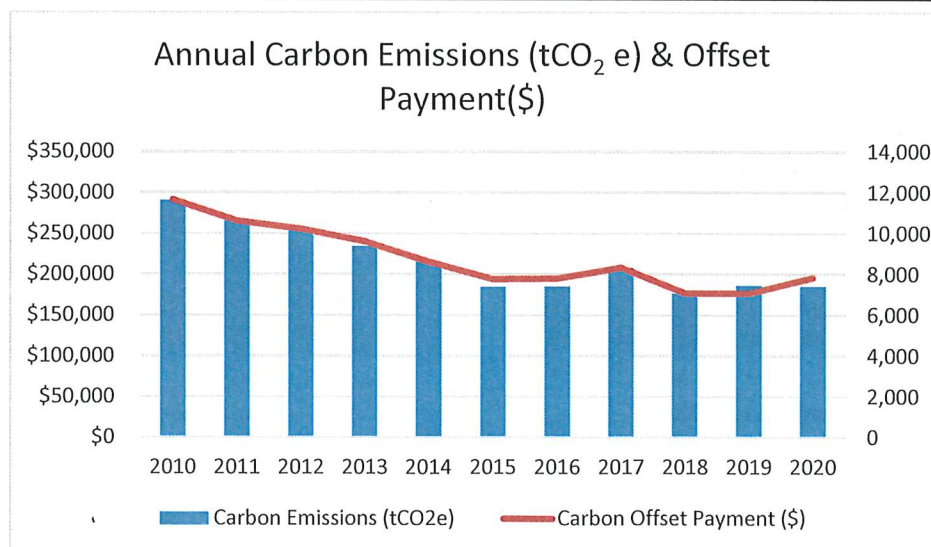
CHANGES TO GREENHOUSE GAS EMISSIONS AND OFFSETS FROM BASELINE YEAR 2010

In 2010, the total offsets required were 11,649 tCO₂e. Total offset investment was \$291,225.00. As a result, in 2020, SD43 saw a reduction in emissions by 4,172 tCO₂e and \$104,300 in offset payment representing a drop of 36% over baseline.

ANNUAL EMISSIONS AND OFFSETS YEAR OVER YEAR

The table below shows the annual carbon emissions by the District and offset payments made.

Year	Carbon Emissions (tCO ₂ e)	Carbon Offset Payment (\$)
2010	11,601	\$291,225
2011	10,636	\$265,575
2012	10,216	\$255,400
2013	9,392	\$239,950
2014	8,623	\$215,575
2015	7,417	\$194,195
2016	7,436	\$195,195
2017	8,343	\$208,400
2018	7,078	\$176,950
2019	7,073 + 401 (Carried over to 2020)	\$176,825
2020	7,429 + 401 (7830)	\$195,750



ACTIONS TAKEN TO REDUCE GREENHOUSE GAS EMISSIONS IN 2020

SD43 has been a Power Smart Partner with BC Hydro since 2010 employing an Energy Manager and involving the District in the BC Hydro Energy Manager Program. The District also utilizes the Energy Specialist Program with FortisBC to employ an Energy Specialist which has added significant depth to our Energy Management portfolio. Our Energy Management team works within the Facilities Maintenance and Development department providing resources to develop a variety of carbon reduction initiatives such as lighting retrofits, HVAC upgrades, DDC (Direct Digital Controls) improvements and building energy studies. The Energy Management team also works with our staff and students on numerous behavioral and educational initiatives to further our organizations and our communities understanding and adoption to sustainability and the reduction of our carbon footprint to mitigate climate change.

HEATING PLANT UPGRADES

In 2020, like almost all other years, approx. 90% of greenhouse gas emissions were from the combustion of natural gas for heating. This is one of the key drivers to retrofit heating systems by replacing inefficient plants with high efficiency condensing boilers, installing variable frequency drive, changing over to electrification by way of heat pumps and improving DDC controls and scheduling. These projects have multiple benefits, including better efficiency, a high turn-down rate, and a far greater ability to meet building load. All these measures reduce natural gas consumption and in turn reduce GHG emissions.

2020 HEATING PLANT RETROFIT PROJECTS:

- **Winslow Centre:**
 - Replaced existing atmospheric boilers with high-efficient condensing boilers
 - Expected Energy savings: 650 GJ/year



Old Atmospheric Boilers



New Condensing Boilers

- **Minnekhada Middle School:**

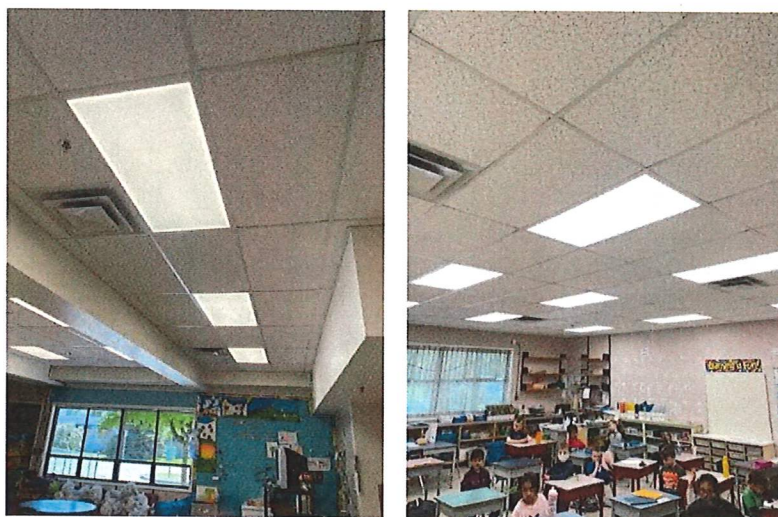
- Minnekhada has been one of our least efficient schools for many years. The new replacement school was opened in April 2020 with high-efficient boilers and water heaters.
- Expected Energy savings from boilers alone: 425 GJ

LIGHTING UPGRADES

Every year, Coquitlam School District undertakes several lighting upgrade projects i.e. changing over from existing HID, incandescent, and fluorescent lights to LEDs, with funding support from BC Hydro to reduce energy consumption and improve the learning space. In 2020, the District continued to implement full-school LED upgrades across numerous sites, and this program will continue for years to come.

2020 LED LIGHTING RETROFIT PROJECTS

In 2020, SD43 completed LED lighting changeovers at six elementary schools. These upgrades will reduce our Districts electrical consumption by approximately 445,360 kWh while at the same time will allow for classroom lights to be dimmed to create a better learning environment.



The six schools:

- **Blakeburn Elementary:**
 - LED upgrade. Project cost: \$61,665. Energy savings: 86,223 kWh / yr.
- **Pinetree Way Elementary:**
 - LED upgrade. Project cost: \$57,570. Energy Savings: 81,470 kWh / yr.
- **Bramblewood Elementary:**
 - LED upgrade. Project cost: \$62,880. Energy Savings: 90,518 kWh/ yr.
- **Rochester Elementary:**
 - LED upgrade. Project cost: \$50,758. Energy Savings: 53,735 kWh/ yr.

- **Leigh Elementary**
 - LED upgrade. Project cost: \$84,886. Energy Savings: 82,872 kWh/ yr.
- **Birchland Elementary:**
 - LED upgrade. Project cost: \$58,492. Energy Savings: 50,541 kWh/ yr.

ELECTRIC VEHICLE INTEGRATION

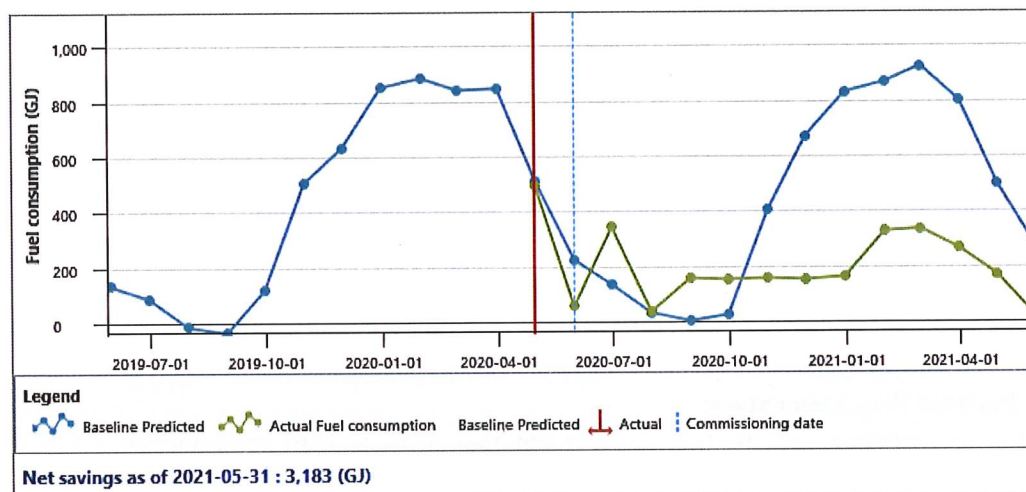
During 2020 SD43 began to start the gradual implementation of EV Chargers at selected sites. Through CleanBC programs four sites have now been provided charging to encourage District staff to select Electric cars as their mode of transport to work. We will continue to add charging at other sites going forward, this includes at all our new constructed sites. The District will also add Electric vehicles into the Maintenance Fleet starting in 2021 and continue as appropriate electric options come available and as costs become more affordable.



NEW CONSTRUCTION

At SD43, all new capital construction projects continue to employ innovative and sustainable design practices by complying with LEED Gold building standard.

In 2020 the District replaced Minnekhada Middle School which was one of the highest gas consumers in the District. The new Minnekhada was built to a LEED Gold Std equivalent with high-efficient new mechanical systems and LED lighting. This has proven to be a huge GHG saving for the District now that the old school has been demolished.



BEHAVIOURAL PROGRAMS

Due to COVID-19, the District has been restricted from many of the usual behavioral initiatives and campaigns amongst students that had become part of our culture. These changes however created opportunities to try new ideas and restructure direction and focus. In 2020 the District became innovative in ways of engagement, using virtual meetings to interact has proven to find new ways of engagement and involvement.

ENERGY MANAGEMENT- A CARETAKER VIEWPOINT

SD43 has been continuously working towards promoting energy management and sustainability behavior through the District. Besides students & teachers, one of the key resources that can contribute towards energy management in schools is the caretakers as they spent most of their time in schools. Therefore, a campaign was done to propagate energy management among caretakers (more than 300). The main objective of this campaign was to identify low-cost opportunities for energy conservation in schools, engage and empower Caretakers to be mindful towards the reduction of energy use, increase knowledge and awareness and invite ideas and suggestions. The process we followed included a survey with 15 questions on energy management asking about whether they would like to learn more about energy management. Based on response and issues identified, we undertook several improvement initiatives through the district along with a follow-up best practice interactive session with caretakers.



HIGHLIGHTS:

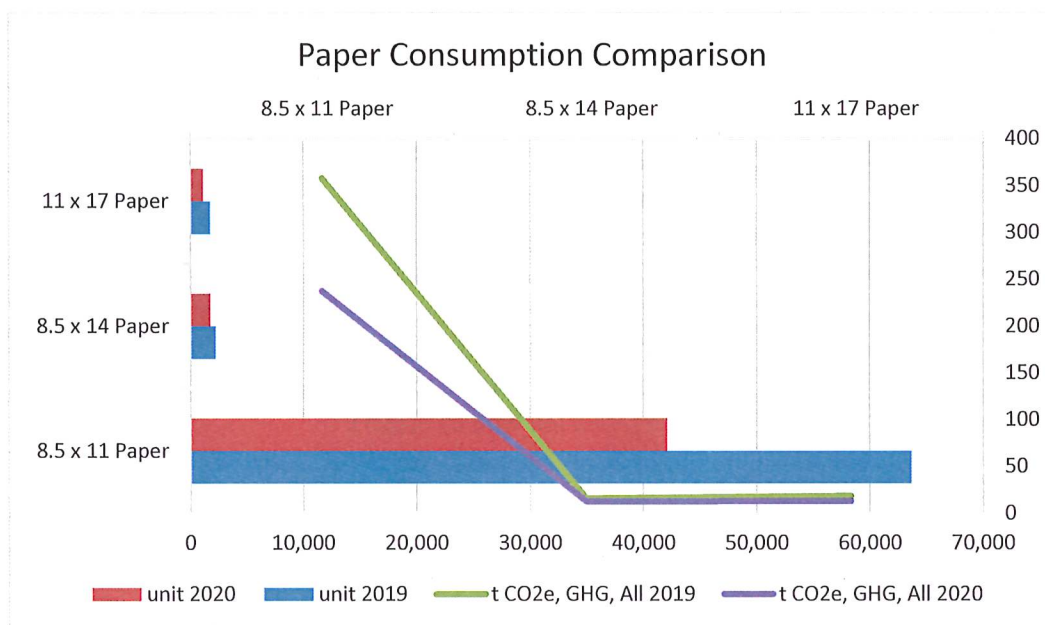
- More than 100 caretakers participated in both the survey & follow-up sessions wanting to learn more about energy management in schools.
- Great ideas were suggested by caretakers such as hallway sensors, heating issues, lighting, weatherstripping, programmable Thermostats etc.
- And the dialogue with our Caretakers continues...

DISTRICT SUSTAINABILITY LEADERSHIP

With a view to promote interaction between green teams within the school, a District sustainability leadership has been launched wherein all school students and teachers (representatives from Green teams) meet on monthly basis to discuss about their respective sustainability initiatives being undertaken by them in their respective schools and opportunities of working together on common topics are identified and promoted by the energy management and sustainability team of SD43.

PRINT-WISE

The District continues to move forward on its overall print strategy, “Print-wise”, replacing and/or removing all outdated printers and fax machines and monitoring user copy/print volumes. This new approach showed a decrease in paper and copy amounts and costs. All schools continue to phase out excessive printers to further reduce consumption. The District encourages teachers, staff and schools to go to paperless newsletters and notices, as well as creating virtual classrooms and online homework and discussion boards in attempts to reduce paper consumption. District level meetings encourage posting handouts online and increased use of tablet technology to review resources and electronically recorded notes. We are seeing great results in terms of paper savings through the district as we see a drastic drop in our GHG Emissions due to office paper. Graph below shows the drop in GHG emissions:



HOLIDAY SHUTDOWN CAMPAIGN

The concept of working with our students in closing our schools before extended breaks has become tradition. Before the breaks SD43 launched Energy Shutdown campaigns, raising awareness, and instilling behavioral actions. Impactful posters and shutdown checklists were distributed throughout the school district. Participating schools were asked to complete the checklists for their school as well as submit behavioral action photos.



PLANS TO CONTINUE REDUCING GREENHOUSE GAS EMISSIONS IN 2020

School District 43 will continue to reduce Greenhouse Gas Emissions by educating our students, staff and parents, facilitating actions and promoting innovations leading to sustainable behavioral change throughout our community.

As part of our overall strategy to reduce our GHG emissions, Coquitlam School District has made energy management and environmental sustainability a priority. With the continued support from the Ministry as well as BC Hydro and FortisBC, the District will continue to make every effort to meet or exceed the annual energy reduction target of 3%.

Facilities and Maintenance will continue with HVAC and lighting upgrades to contribute to more energy efficient buildings and better learning and working environments for students and staff. Also, as part of the design process for new schools, the District will continue to consult with energy modelers to ensure that all new buildings perform at optimal levels of energy efficiency. In 2021, the following projects will take place:

NEW CONSTRUCTION 2021

- **Education Learning Centre (Replacement Board Office)**



Graphic Image of ELC Board Office

- In addition, SD43 has started construction in 2020 on two schools (Irvine Elementary and Sheffield Elementary).



Graphic Image of Sheffield Elementary

MECHANICAL UPGRADES 2021

School District 43 will continue to reduce Greenhouse Gas Emissions by improving aging mechanical systems as funding comes available.

The following mechanical projects will be initiated in 2021:

- **Montgomery Middle School**
 - Replace existing boilers with high-efficient boilers: Expected savings of 1400 GJ/yr.
- **Miller Park Elementary School**
 - Upgrade DDC, replace unit-ventilators. Expected savings of 397 GJ/yr.
- **Central Elementary**
 - Replace existing boilers with high-efficient boilers, new AHU's, upgrade DDC, new unit-ventilators. Expected savings of 410 GJ/yr.

The following mechanical projects have been identified and are awaiting final approval and funding in 2021:

- **Leigh Elementary**
 - Replace Existing boilers with high-efficient boilers and on demand water heaters, upgrade DDC, replace unit-ventilators. Expected savings of 319 GJ/yr.
- **Millside Elementary**
 - Replace existing boilers and water heaters with high-efficient boilers and on demand water heaters; upgrade DDC; replace unit-ventilators. Expected savings of 525 GJ/yr.
- **Eagle Ridge Elementary**
 - Replace existing boilers and water heaters with high-efficient boilers and on demand water heaters; upgrade DDC; new AHU; replace unit-ventilators. Expected savings of 320 GJ/yr.

- **Aspenwood Elementary**
 - Replace existing boilers and water heaters with high-efficient boilers and on demand water heaters; upgrade DDC: Expected savings of 500 GJ/yr.
- **Mary Hill Elementary**
 - Upgrade DDC; new AHU; replace unit-ventilators. Expected savings of 200 GJ/yr.

LIGHTING UPGRADES 2021

School District 43 will continue to change older lighting to LED to reduce Greenhouse Gas Emissions, operating costs and improve the learning space of the schools.

The following LED retrofit projects have been initiated for 2021:

- **Winslow Centre:**
 - LED upgrade. Project Cost: \$110,000 Energy savings: 106,366 kWh / yr.
- **Port Moody Secondary School:**
 - LED upgrade. Project Cost: \$230,000 Savings: 237,796 kWh / yr.
- **Baker Drive Elementary:**
 - LED upgrade. Project Cost: \$25,000 Energy Savings: 31,457 kWh/ yr.

CONCLUSION

The District continues to strive towards a combination of both technical and behavioural projects to reduce energy consumption across our portfolio. With a 36% reduction in total energy consumption since 2010, we have exceeded both our internal goals and those set out by the provincial government. We are proud to be leaders in the climate action field.

We are confident that with sustained executive support and the enthusiasm of students and educators, the District will continue to surpass its GHG reduction goals. Our enduring optimism is driven by the belief that educating through example will be the best path to a greener tomorrow.

APPENDIX A: GHG EMISSIONS SOURCE DETAIL REPORT FOR 2020

Approximated 2020 GHG Emissions by Source

		2020			
	GJ	kg	unit	l	t CO2e, GHG, All
Direct Fuel Combustion					
Offset Exempt					
Offset Required	132,984			3,423,017,158	6,632
Total	132,984			3,423,017,158	6,632
Purchased Energy					
Offset Exempt					
Offset Required	65,671				197
Total	65,671				197
Mobile Energy Use					
Offset Exempt					
Offset Required				134,421	337
Total				134,421	337
Office Paper					
Offset Exempt					
Offset Required			45,105		263
Total			45,105		263
Fugitive Emissions					
Offset Exempt					
Offset Required					
Total					
Total	198,655		45,105	3,423,151,580	7,429
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