



CARBON NEUTRAL ACTION REPORT

June 12, 2019

Surrey Schools Board of Education Meeting

Background

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- The Province has legislated that the entire public sector be carbon neutral by reducing its greenhouse gas emissions to net-zero each year.
- Becoming Carbon Neutral is a four step process
- The Carbon Neutral Action Report fulfills Step 4.

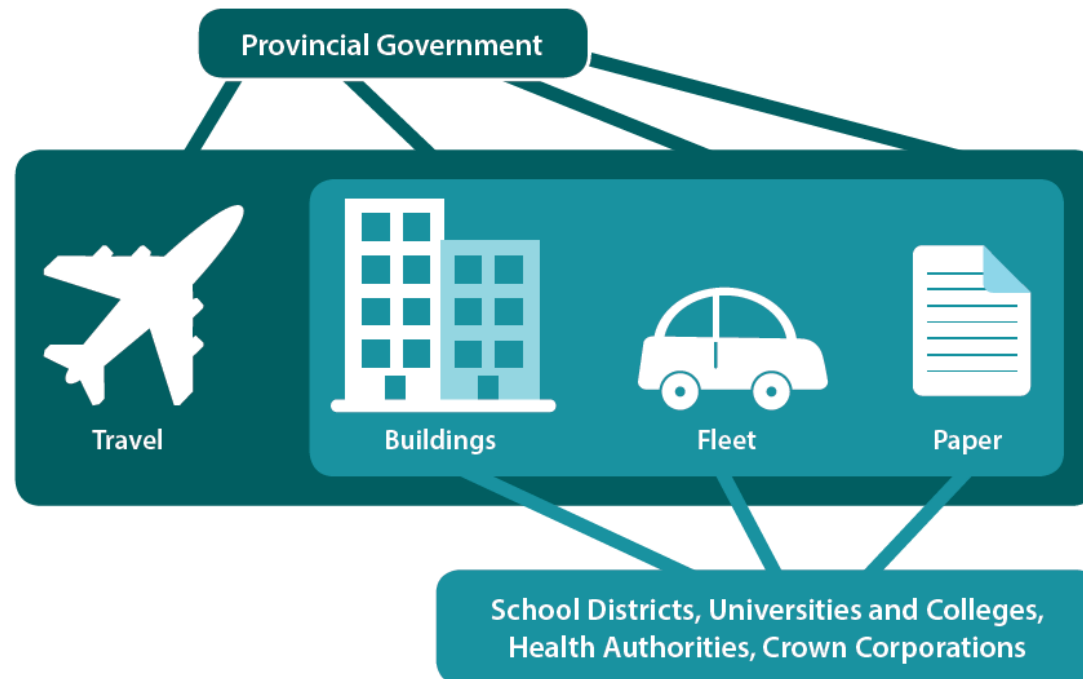


1. Measure

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- We are required to track and report Greenhouse Gas (GHG) emissions from three sources:

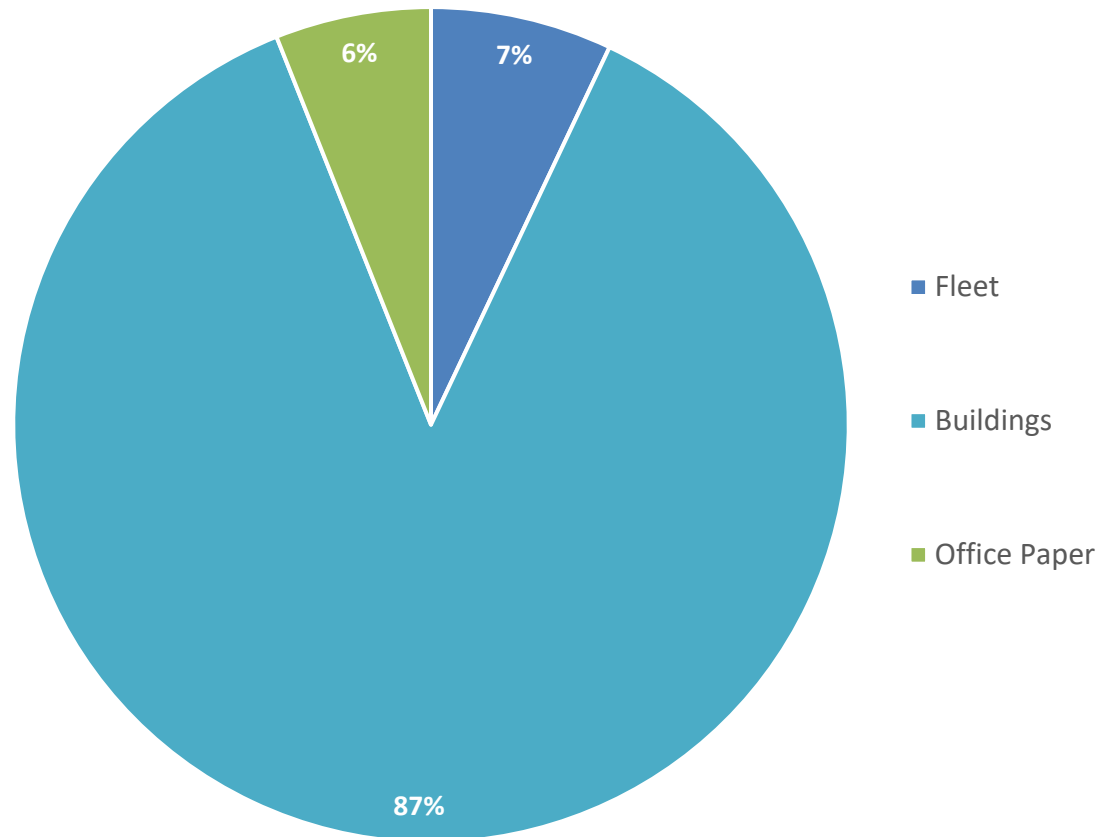
Reported Emissions



1. Measure

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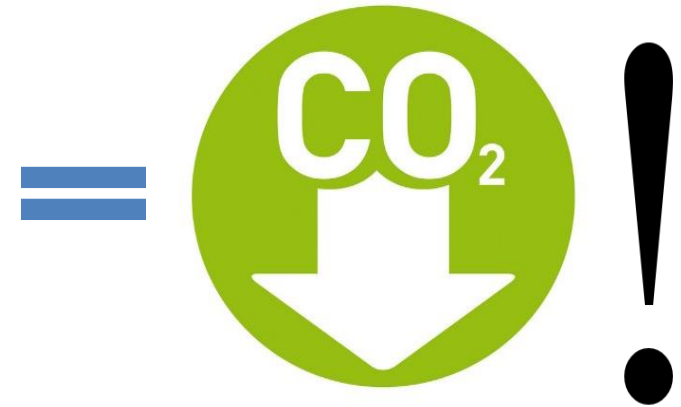
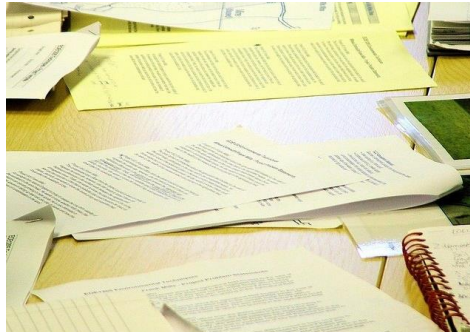
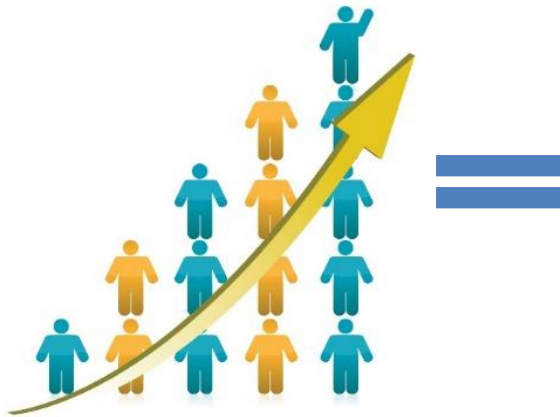
2018 GHG Emissions by Source



Total Emissions = 16,708 tCO₂e

1. Measure: 2018 Emissions Trends

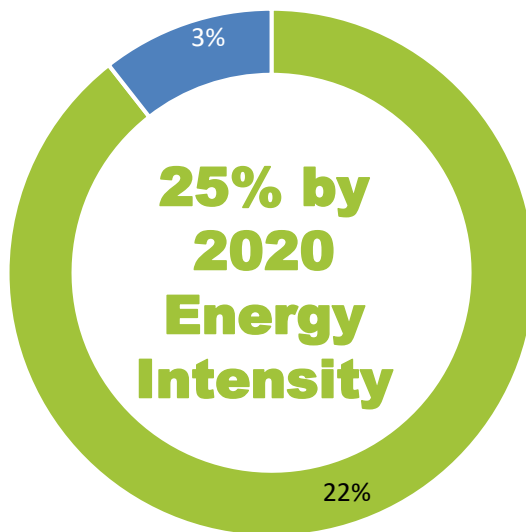
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1. Measure: Targets & Results

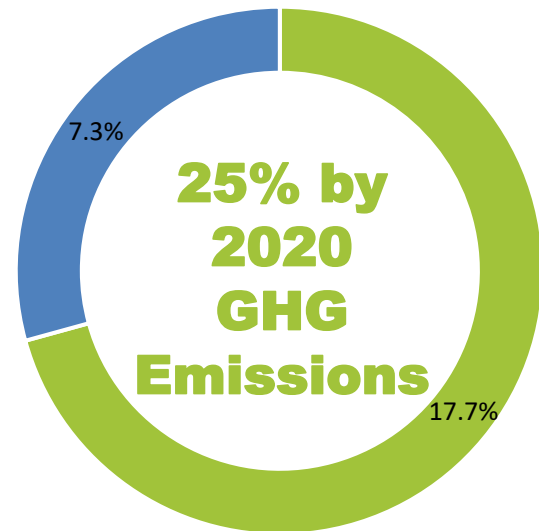
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Energy Intensity Targets



■ Reduction Achieved ■ Remaining to Goal

GHG Emission Targets



■ Reduction Achieved ■ Remaining to Goal

2. Reduce

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Strategic Planning + Collaboration = Success



- Facilities
- Capital Projects Office
- Information Management Services
- Purchasing & Corporate Services
- School administrators, staff & students
- Energy Management & Sustainability

2. Reduce: Fleet

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Results:

- Down 6.5% from 2018
- Total reduction of 2% from baseline

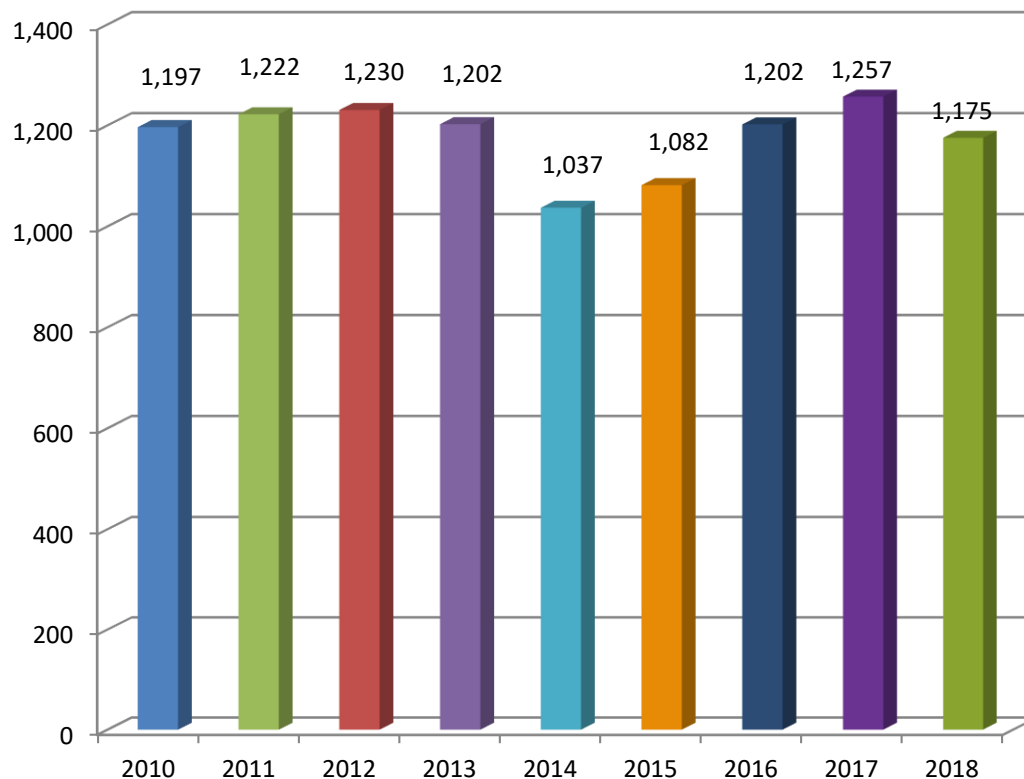
Actions to reduce in 2018:

- Replaced 13 fleet vehicles with more fuel efficient models
- Studies to investigate EV charging at DEC & Facilities
- Including infrastructure for future charging stations in new construction projects

Future initiatives:

- Investigating options for electric fleet vehicles

Surrey Schools GHG Emissions - Fleet



2. Reduce: Office Paper

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Results:

- Down 1% from 2017
- Emissions per student down 3%
- Total reduction of 18.5% from baseline

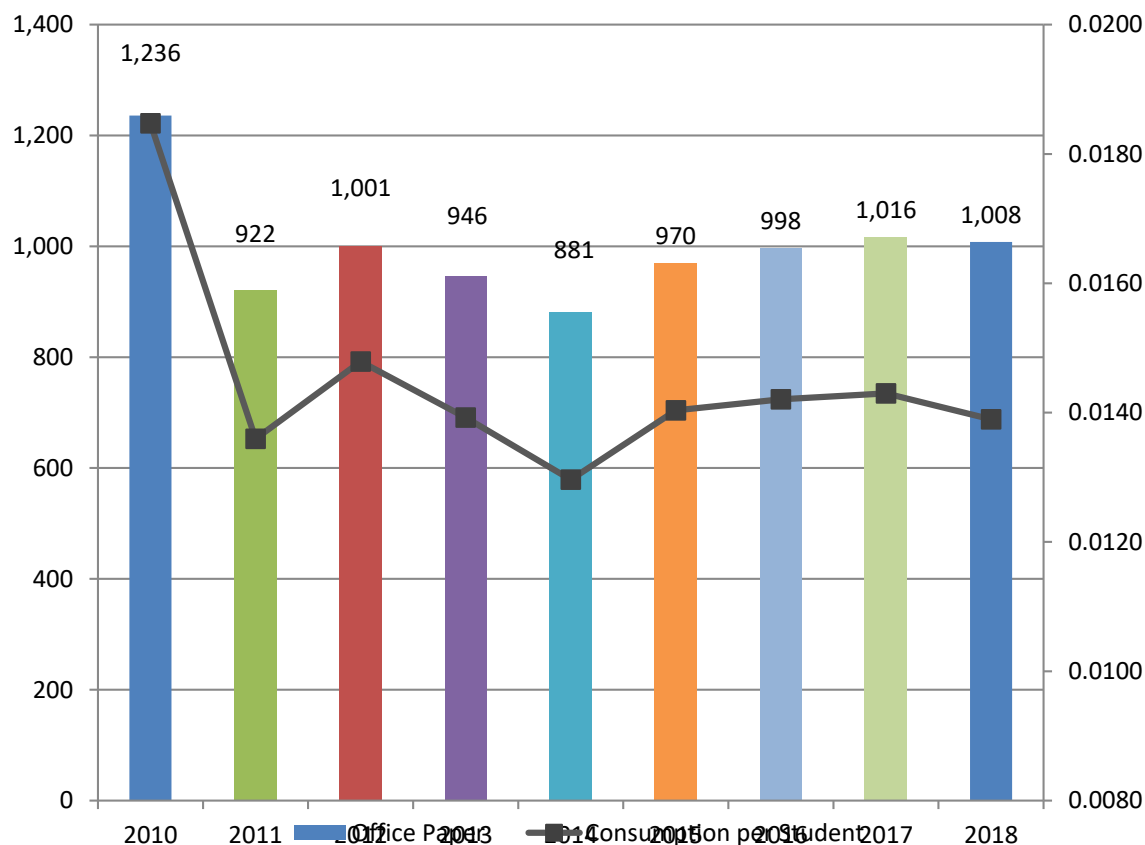
Actions to reduce in 2018:

- Print management strategy across secondary schools
- Paper conservation campaign toolkit

Future Initiatives:

- Benchmarking, target-setting & communication

Surrey Schools GHG Emissions - Office Paper



2. Reduce: Buildings

3 ways to conserve energy & reduce emissions in buildings:

- Building Design
- Building Operations
- Occupant Behaviour



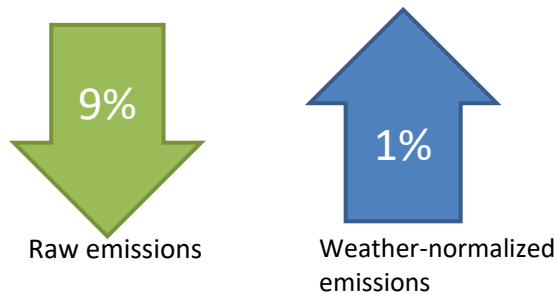
*"Achieving high performance across all schools requires well-integrated policies and standards together with strong organizational alignment."*¹

2. Reduce: Buildings

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Results:

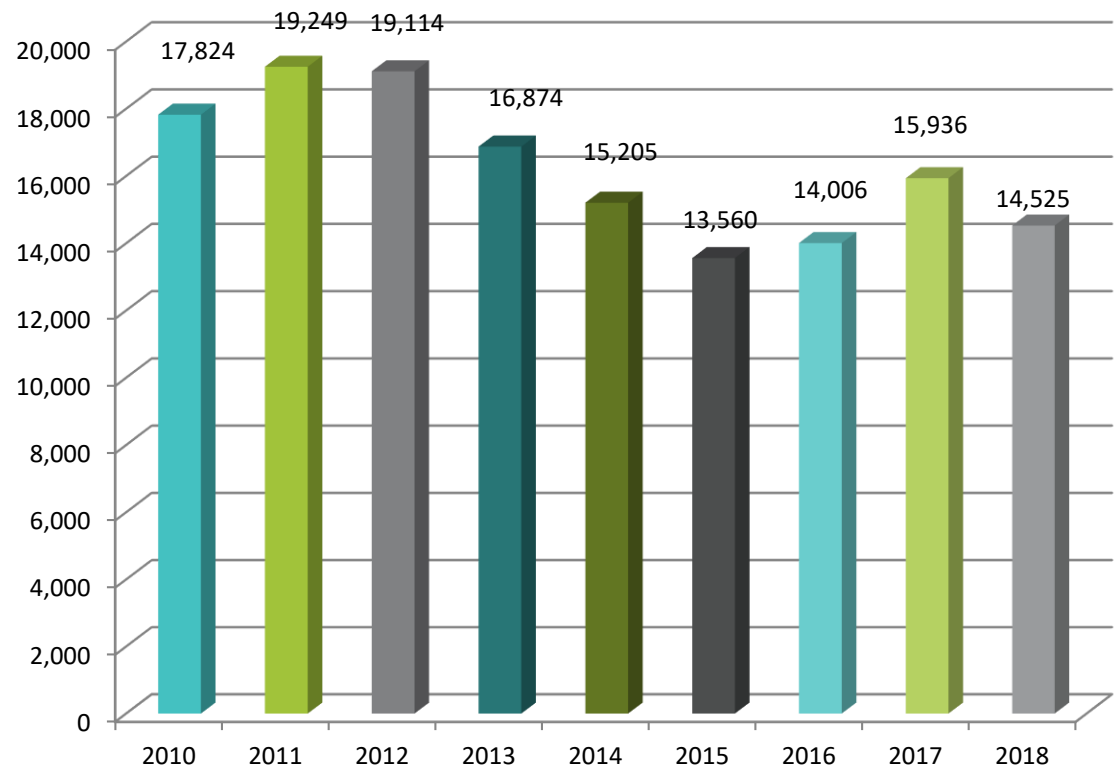
□ Compared to 2017:



□ From 2010 Baseline:



Surey Schools GHG Emissions - Buildings



2. Reduce: Building Design

New Construction

- Salish Secondary
 - ▣ Currently operating at less than 50% of average secondary energy intensity
- Woodward Hill Elementary & Panorama Park Additions
 - ▣ Energy efficient boiler upgrades & LED lighting
- Maddaugh Elementary, Grandview Secondary, Sullivan Heights addition
 - ▣ Whole building energy studies
- Net Zero Energy options for Site 207 (South Sunnyside)

Building Retrofits

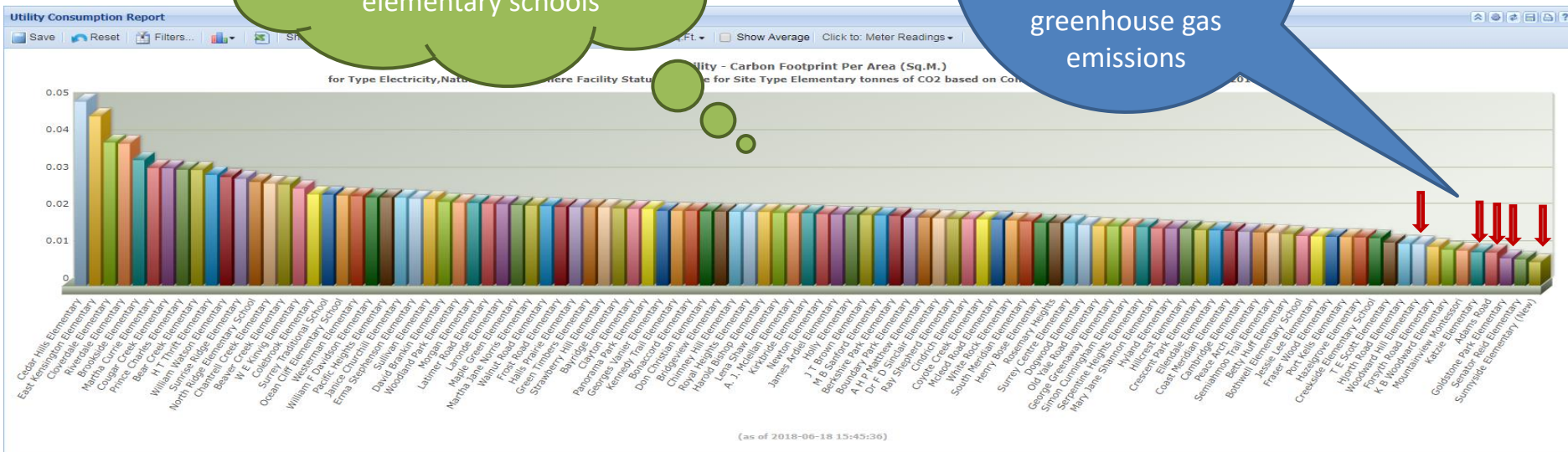
- Boiler replacements – 2 schools + Facilities
- Lighting upgrades – 6 schools
- Boiler & mechanical system upgrade – Bear Creek



2. Reduce: Building Design - Results

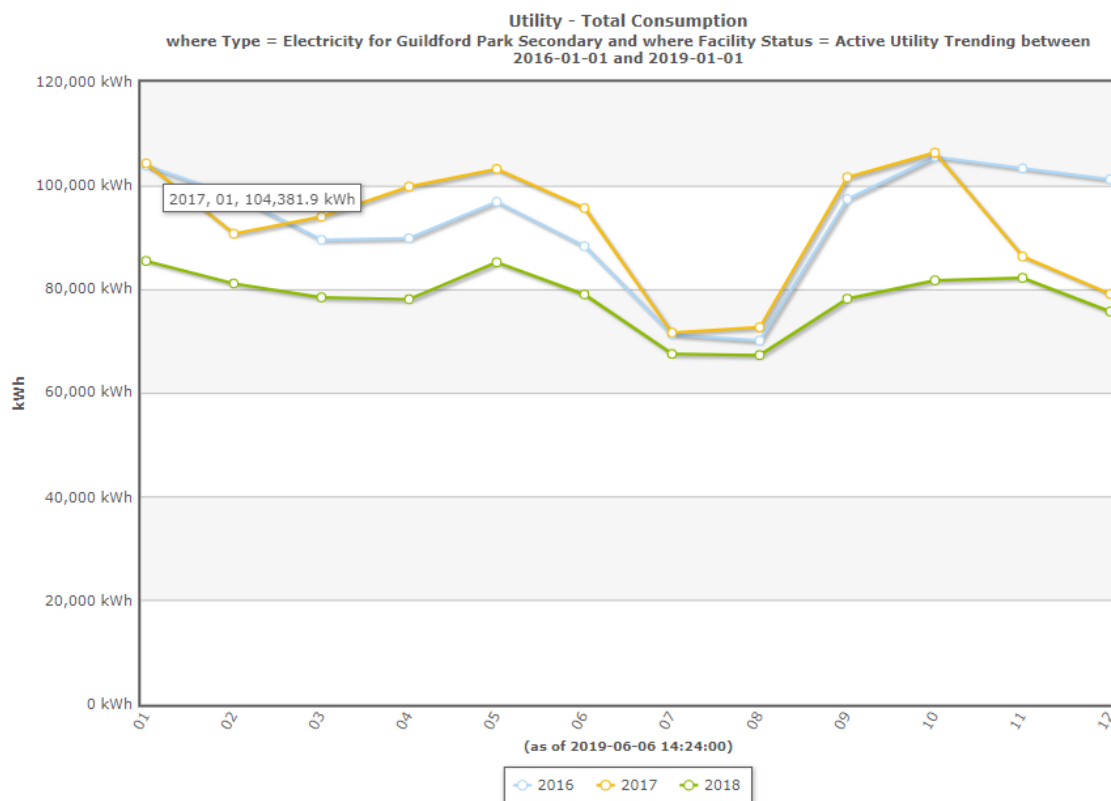
Our five newest elementary schools average 23% more energy efficient than existing elementary schools

The five newest elementary schools & Salish Secondary have very low greenhouse gas emissions



2. Reduce: Building Operation

- Upgrade building automation systems
 - ▣ Guildford Park Secondary
 - ▣ Cougar Creek Elementary
- Recommission buildings with high energy intensity
 - ▣ 2nd round of secondary & elementary schools is under way
- Ongoing energy performance investigations
 - ▣ Monitor actual versus baseline energy usage weekly and investigate anomalies



2. Reduce: Occupant Behaviour

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A poster for the 'Spring Break Shutdown' campaign. The top half features a sunlit forest scene with a television and a microwave on a grassy field. Text on the right says 'MARCH 18 TO MARCH 29'. The bottom half is a blue banner with the title 'Spring Break Shutdown' and the slogan 'Turn it off before you take off'. It lists three actions: 'Bring home your small appliances' (with icons of a kettle and microwave), 'Turn off & unplug electronics' (with a plug icon), and 'Turn down thermostats' (with a thermostat icon). The Surrey Schools logo is at the bottom.

MARCH 18
TO MARCH 29

Spring Break Shutdown

Turn it off before you take off

Bring home your small appliances

Turn off & unplug electronics

Turn down thermostats

Surrey Schools
LEADERSHIP IN LEARNING

Energy Cup Competition Apr 01–30, 2019

Team	Points
1 Sullivan Heights Secondary	1,052
2 Clayton Heights Secondary	719
3 Tamanawis Secondary	712
4 Frank Hurt Secondary	702
5 Semiahmoo Secondary	642

0h 0m 0s

remaining

33,850
kWh saved

16

actions taken

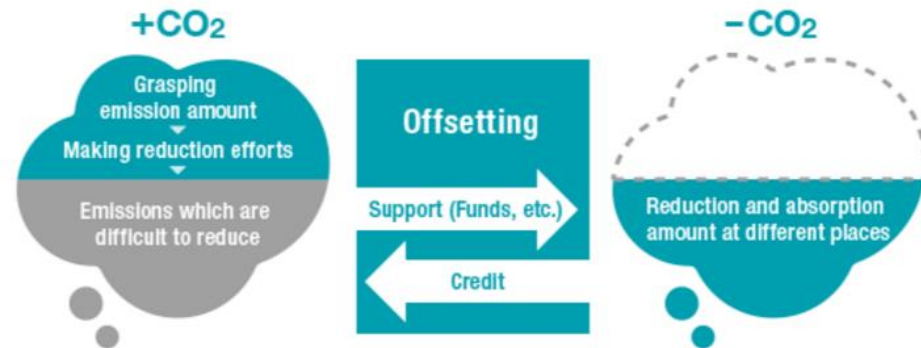
267
posts



3. Offset

16

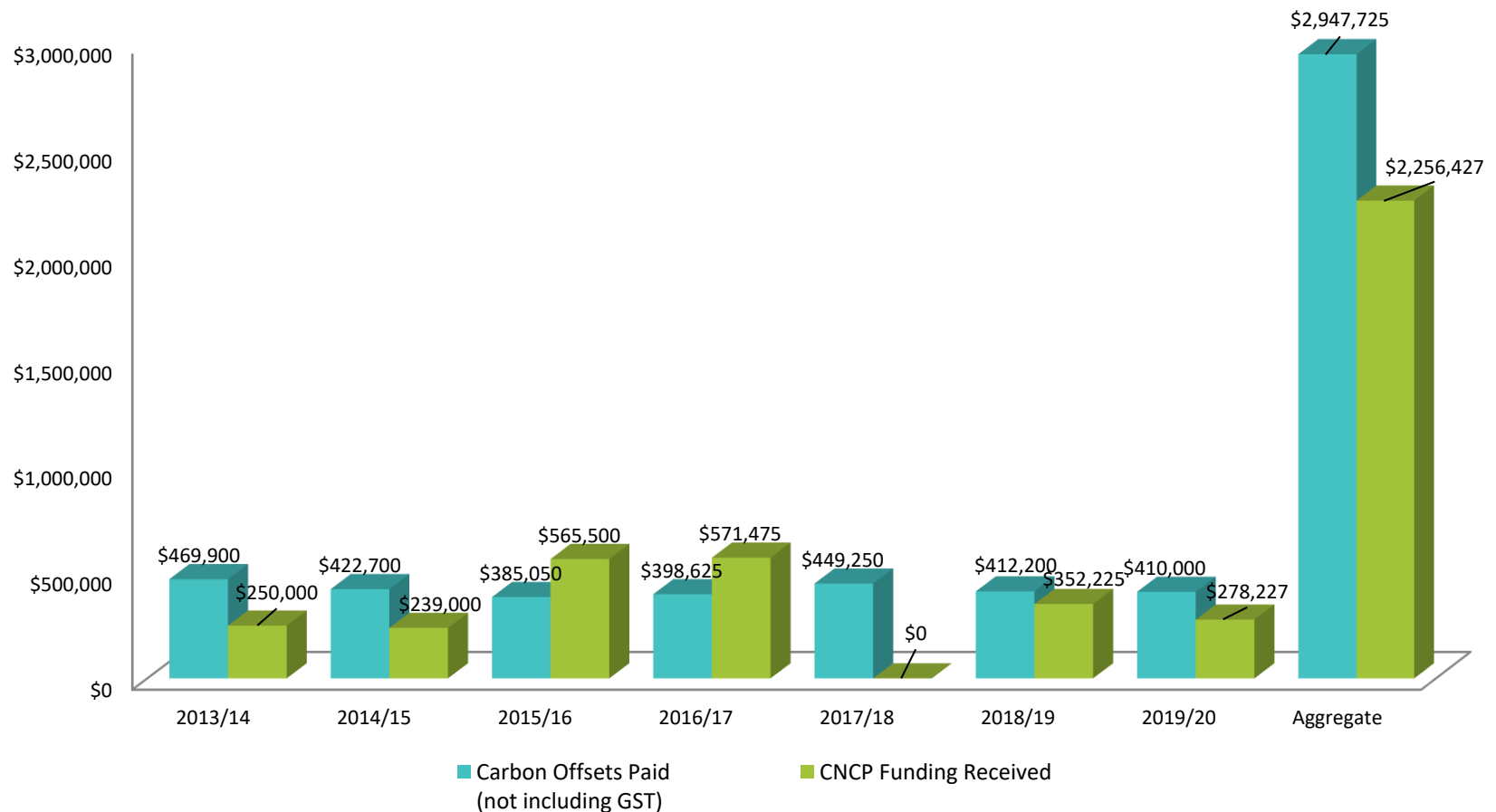
Carbon Offset:
The reduction or sequestration of greenhouse gas made to compensate for (offset) emissions produced elsewhere



- ▣ Current BC offset rate: \$25/tonne
- ▣ Surrey Schools 2018 emissions: 16,708 tCO₂e
- ▣ School bus exempt emissions: 221 tCO₂e
- ▣ Total offsets required: 16,488
- ▣ **2018 Offset investment to achieve carbon neutrality: \$412,200 +GST**

3. Offset: Offset Expenses vs CNCP Grants

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4. Report

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2018 CARBON NEUTRAL ACTION REPORT



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For this year's report we chose to focus on the theme of connecting children to nature. Research shows that children who regularly have opportunities to spend time outdoors are healthier, happier and even smarter. And yet statistically, most North American children spend only minutes a day outside and up to seven hours daily in front of a screen. With its focus on place-based and experiential learning, the new BC curriculum is well suited to incorporate outdoor learning and foster connections to nature. As evidenced by the photos in this report, many Surrey Schools educators are finding ways to take learning outdoors. Programs like the East Kensington Outdoor Learning (EKOLoGy), grassroots networks like the Surrey Environmental Educators of District #36 (SEED36) and partnerships such as School Travel Planning are building capacity and increasing the number of opportunities for students to get outside and connect with nature.



**ABOUT THE
DESIGN**



4. Report – Carbon Neutral Government

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2017 Carbon Neutral Year Summary

EACH YEAR SINCE 2010, B.C. has achieved carbon neutral operations, maintaining a net impact of zero greenhouse gas (GHG) emissions across public sector organizations (PSOs), including health authorities, school districts, post-secondary institutions, Crown corporations and provincial government.

B.C.'s legislated carbon neutral government commitment is a significant *first* in North America—one that's reducing emissions, saving energy costs, and spurring the development of clean technology and new jobs.

Facts for 2017:

- For the 2017 reporting year, British Columbia's 128 public sector organizations generated 785,583 tonnes of greenhouse gas emissions from their operations. (Refer to Tables 1 and 2 below.)
- This represents a reduction of 27,580 tonnes compared to the baseline year of 2010, a reduction equivalent to taking nearly 10,000 cars off the road for a year.¹
- To achieve carbon neutrality, government purchases offsets that include emission reductions from project investments in nearly every region and sector of the province.
- For the 2017 reporting year, offsets were sourced from projects involving energy efficiency, fuel switching, sequestration and greenhouse gas destruction. (Refer to Table 3 below.)
- B.C.'s emission offset portfolio has resulted in total emissions reductions of approximately 5.6 million tonnes of carbon dioxide equivalent between 2010 and 2017, equivalent to the emissions from 2 million cars in one year.
- In 2017, seven B.C. public sector organizations were recognized by Canada's 100 Greenest Employers: BC Housing Management Commission, BC Hydro, Kwantlen Polytechnic University, Provincial Health Services Authority, School District No.36 (Surrey), University of British Columbia, and University of Northern British Columbia.

The total emissions reported in this summary meet the reporting requirements set by the Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act.



School District 36 Adams Road



School District 36 atrium



School District 36 Sunnyside



School District 36 Goldstone Park

Surrey Schools – A Culture of Sustainability

At the Surrey school district (Surrey Schools), the passion of both staff and students to **create a sustainability culture** drives an integrated commitment to energy conservation and emissions reductions. Since 2010, total GHG emissions have been reduced by 20 percent, despite a steady increase in student enrolment. In 2016 and again in 2017, the school district was recognized as one of Canada's Greenest Employers. At the foundation of their success is a **leadership commitment** that includes a corporate energy management policy that aligns the strategy of education with effective facilities management and planning.

The district has seen first-hand how **setting goals** can help realize significant emission reductions. In 2016, they launched new five-year energy and emissions goals. For the first time, Surrey Schools also included an engagement target that encourages each school to participate in at least one conservation initiative per year.

In order to **harness champions of sustainability**, the school district provides flexibility and resources to encourage innovation. The district also **recognizes and celebrates achievements** through events such as 2016's Green Champions.

Low Carbon Building Design

By **investing in knowledge and being aware of funding sources** such as BC Hydro's new construction incentives, Surrey Schools has been able to include energy-efficient technologies when constructing new facilities and replacing old equipment.

Since 2010, five new elementary schools have been built using low-carbon design. These buildings operate, on average, three times more efficiently than other elementary schools in Surrey. In new schools and administrative buildings, the district has invested in low-carbon heating alternatives to natural gas, such as air-source heat pumps and geo-exchange systems.

Conservation Creativity

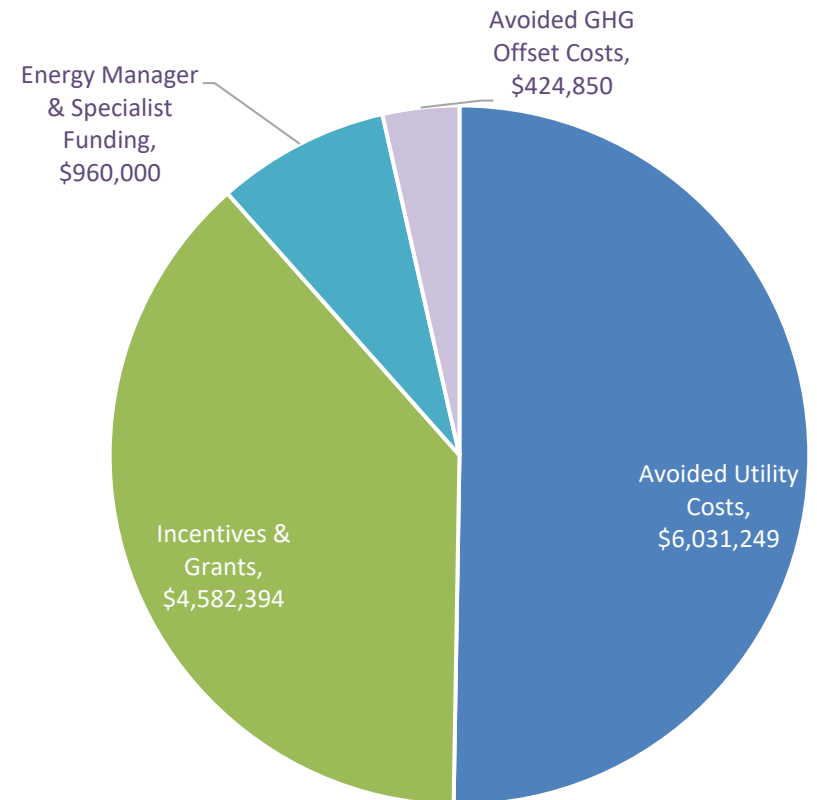
Creativity is celebrated during Surrey Schools' Energy Conservation Cup, an annual competition for secondary schools. Sullivan Heights Secondary, winner of the 2016/17 competition, developed an innovative campaign that encouraged staff to swap school mini-fridges for insulated lunch bags. Grade 9 students also delivered interactive presentations on energy conservation and renewable energy to elementary schools.

Participating schools reduced their electricity consumption by three percent over the four weeks of the competition. The total electricity saved was just under 28,000 kilowatts.

Energy & Emissions Management: Value

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Value of Energy & Emissions Management - 2010 to Current



Total Value = \$ 11,998,493

Energy & Emissions Management: Benefits

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- ❑ Increased comfort/learning conditions
- ❑ Increased learning opportunities for students
- ❑ Growth of a conservation culture
- ❑ Decreased risk under changing climate conditions
- ❑ Expertise through partnerships (BC Hydro & FortisBC)
- ❑ Increased staff engagement
- ❑ Recognition for Surrey Schools
- ❑ Enhancing the livability of our environment for future



