CLIMATE ACTION AT SURREY SCHOOLS

2019 CARBON NEUTRAL ACTION REPORT UPDATE

October 14, 2020

Surrey Schools Board of Education Meeting

Introduction

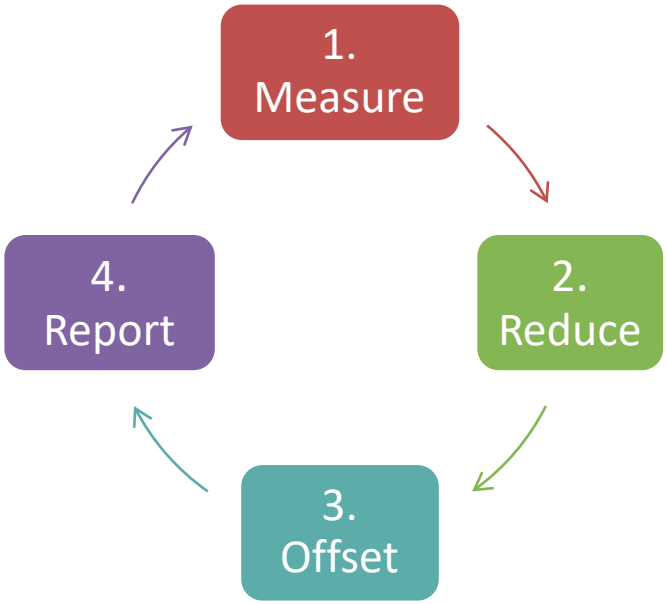
Managing Greenhouse Gases, Energy Use, and Sustainability at Surrey Schools

- Energy management program has existed at Surrey Schools since 2010
- The program is focused on reducing carbon emissions and energy use
- Program is delivered through the manager of energy management and sustainability, David McKee, and energy specialist Hudson Wong
- Both positions which are located in the SECT office and are partially funded by BC Hydro and FortisBC
- Energy management staff
  - work with all departments, especially Facilities, to develop, manage, and execute projects
  - have been involved in 100s of projects or initiatives with annual savings typically 500,000 kWh of electricity and 3,500 GJ of natural gas
  - have run many awareness campaigns that have involved 1000s of students and staff
  - work on sustainability including solid waste, water conservation, and transportation

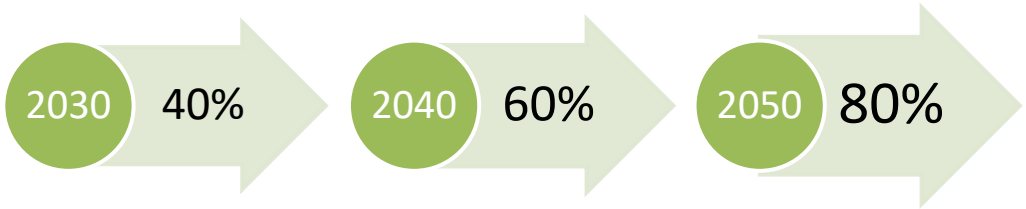
Background on CNAR

Provincial Direction on Greenhouse Gases

- Public sector organizations be carbon neutral by reducing its greenhouse gas (GHG) emissions to net-zero each year
  - Becoming carbon neutral is a four step process
  - The Carbon Neutral Action Report (CNAR) fulfills Step 4.



Provincial GHG Reduction Targets Set for British Columbia



1. Measure

Greenhouse Gas Emissions

- As part of provincial government requirements we track and report on GHG emissions from three sources

88%

6%

6%

- Proportions have been fairly constant over time
- Absolute emissions were higher than 2018 but still 15% below 2010 levels
- Weather adjusted GHG emissions show lowest level since 2010
- Absolute energy use per building area is down 19% since 2010

1. Measure: Targets

Updating Targets

- Surrey Schools is updating its five-year GHG emissions target for 2021 to 2025
- Analyzing options to achieve 2030 target
- For new target, reference 2007 baseline to align with the province

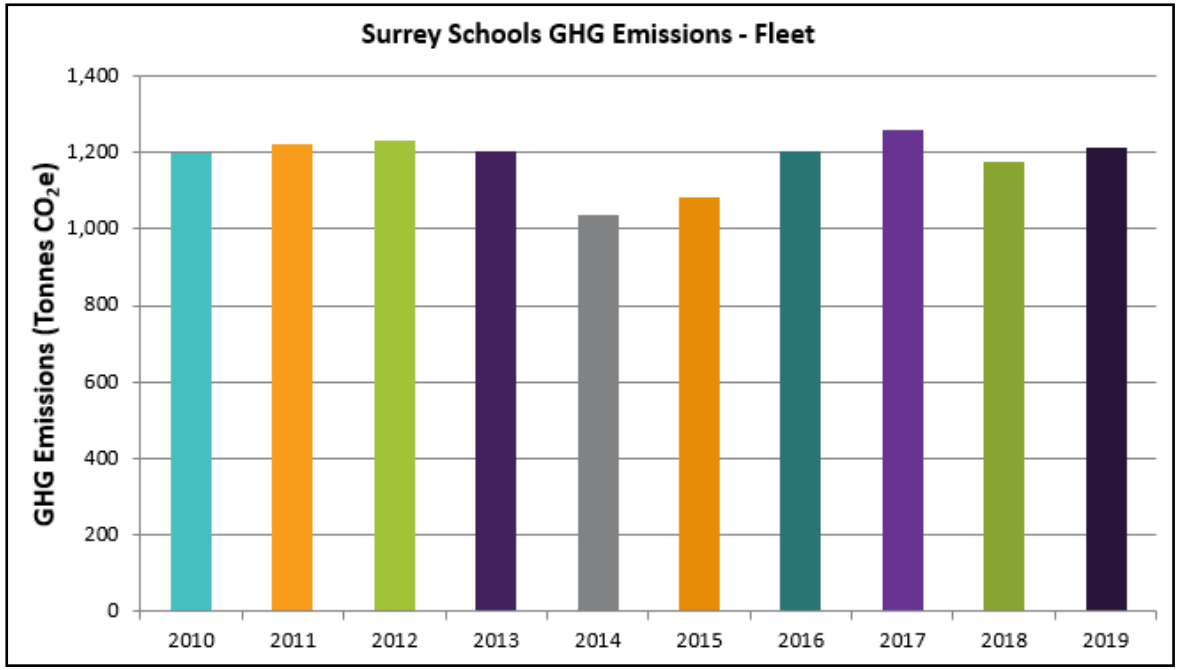
Challenges

- Portfolio of 133 buildings
- Most projects require capital investment; pace of progress will depend on the sources of funding. AFG is the primary source with others to be determined
- School districts no longer receive the carbon tax rebate; this was an important source of funding for emissions reduction projects
- External funding for projects are not predictable for annual budgeting purposes
- New schools need to add minimal carbon emissions but competing priorities during design

2. Reduce: Fleet

2019 Results

- Emissions up 1.2% from 2018 due to increase in fuel consumption
- Little change from 2010 baseline



Reducing Fleet Emissions

- Review options for electric vehicle chargers at DEC
- Replacement of 19 vehicles
- New buildings typically include electrical capacity for EV chargers

Future initiatives

- Inventory and analysis of fleet for right-sizing and green vehicles
- Review need to include chargers in new buildings

2. Reduce: Office Paper

2019 Results

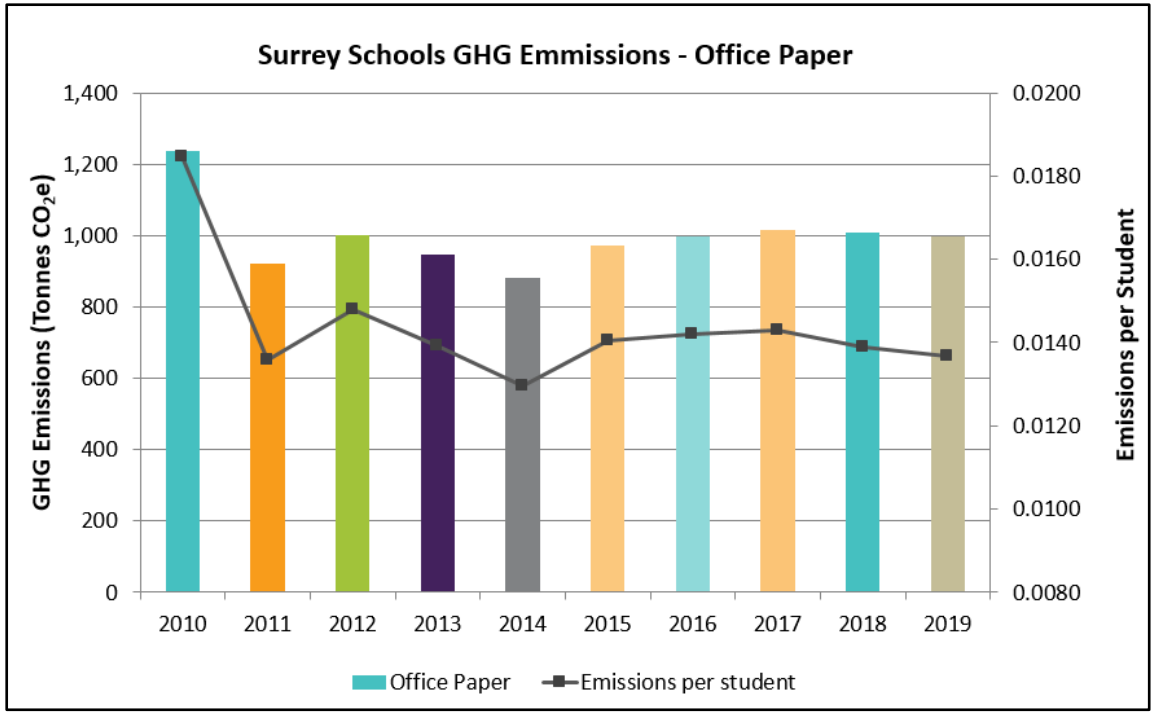
- Paper emissions down 1% from 2018
- Emissions per student down 3%
- 19.3% reduction from 2010 baseline

Reducing Paper Use

- Worked with IMS to analyze opportunities to understand paper use and printer inventories in elementary schools

Future Initiatives

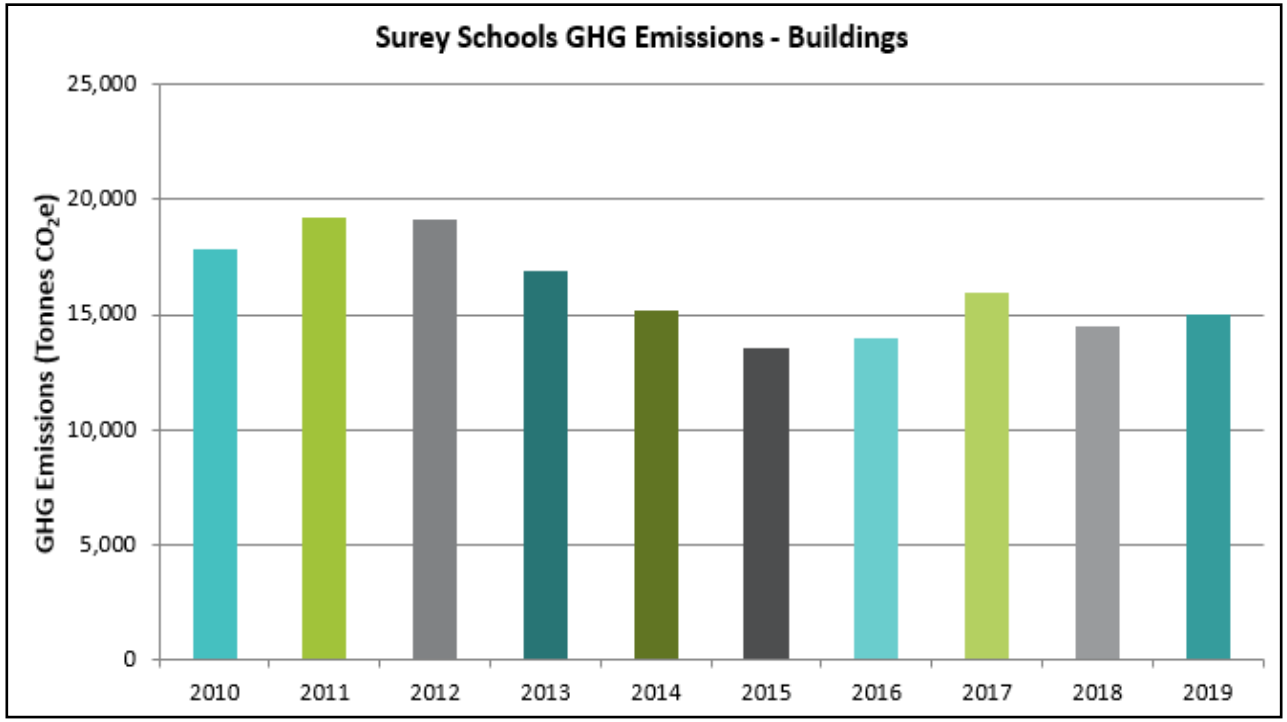
- Create awareness of average paper consumption and costs
- Expand print management software at additional sites to reduce paper use



2. Reduce: Buildings

2019 Results

- Building emissions up 3.1% from 2018
- 16% reduction from 2010 baseline
- Colder winter in 2019 required more natural gas for heating buildings
- Increases in size of building portfolio and student enrollment caused more energy use



2. Reduce: Buildings

2019 Building Energy Projects

- Energy modelling for energy efficiency at new schools
  - Edgewood and Douglas
- Building retrofits – upgrade to more efficient
  - Boiler upgrades at four elementary schools
  - LED lighting upgrades at three elementary schools
  - Building HVAC controls upgrade at Enver Creek
- Building operation "tune up" – optimize use of equipment and system controls
  - Completed energy studies at 13 schools
- Awareness, communications, and engagement
  - Two energy awareness campaigns
  - Updated sustainability information on website

Future Projects

- Continued energy studies, energy efficient retrofits, and awareness campaigns

2. Reduce: Building Design

Energy Efficient and Low Carbon Design

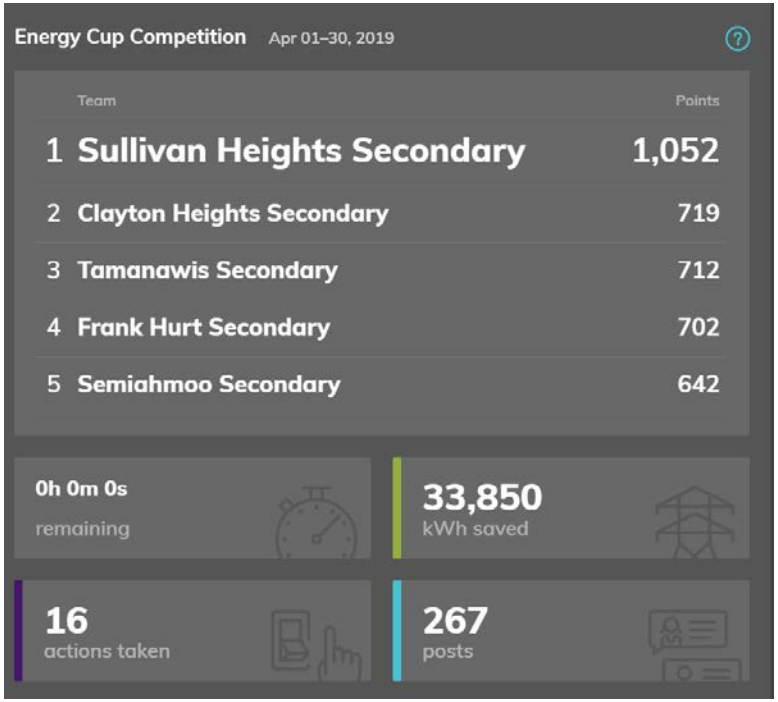
- Average age of schools in Surrey is 43 years so design has long-term impact on utility costs and GHG emissions
- Better windows, walls, and HVAC systems results in newer schools having lower energy use, GHGs, and costs
- New schools undergo energy modelling to support efficient design

Douglas Elementary (conceptual)

Air Source Heat Pump

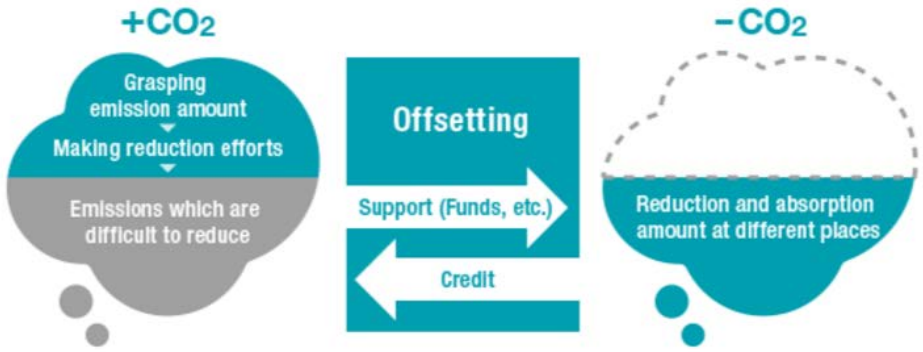
Decade built	GHG emissions per square meter
Pre-2010	0.025
2010 onwards	0.011

2. Reduce: Occupant Behaviour



3. Offset

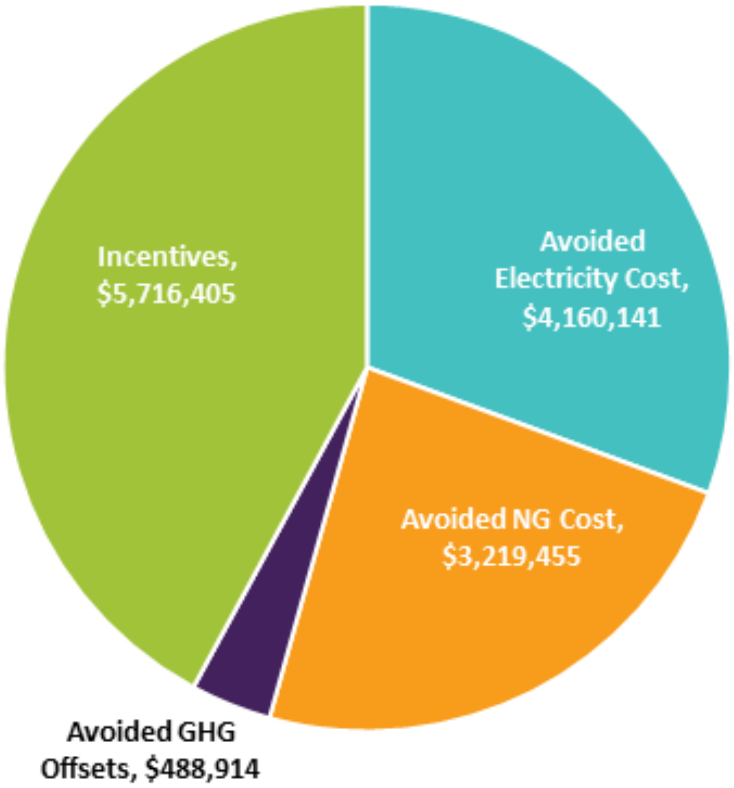
Carbon Offset:
Investment in external greenhouse gas reduction project(s) to compensate for (offset) equivalent amount of annual emissions produced by an organization



- Current BC offset rate: $25/tonne
- Surrey Schools 2018 emissions: 16,708 tCO_2e
- School bus exempt emissions: 221 tCO_2e
- Total offsets required: 16,488
- 2019 Offset investment to achieve carbon neutrality: $412,200 +GST (used 2018 numbers as directed by province due to COVID)

Energy & Emissions Management: Value

Value of Energy and Emissions Management Since 2010



Cumulative value as of 2019 is

$13,580,000

Questions?

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