


Carbon Neutral GOVERNMENT

Year in Review 2016



Ministry of
Environment and
Climate Change Strategy

A decorative teal wavy line that starts at the top left, curves across the top of the page, and ends at the top right.

Front cover: The University of British Columbia's 18-storey mass-timber high-rise, Brock Commons Tallwood House, is the world's tallest contemporary wood building (53 metres, about 174 feet). Recently completed two months ahead of schedule, it showcases the advantages of building with wood. This new tall wood building reflects UBC's leadership in sustainable construction and will house over 400 students. Its construction serves as a model for innovation and advancing sustainability by demonstrating the viability of using engineered wood products in high-rise structures. The amount of carbon stored is calculated to be 1,753 metric tonnes of CO₂. This, combined with the 679 tonnes of avoided emissions, is equivalent to taking 511 cars off the road. *Image courtesy of Acton Ostry Architects Inc. and University of British Columbia.*

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Wilderness bike ride



Executive Summary

Each year since 2010, B.C. has achieved carbon neutral operations across its entire provincial public sector. The pursuit of carbon neutrality has not only enabled public sector organizations (PSOs) to achieve net-zero emissions, it has fostered a fundamental shift in both their operational management and organizational cultures that strengthens their focus on climate action. Beyond offsetting annual greenhouse gas emissions, B.C. PSOs have applied the expertise and the data they've accumulated over the past seven years to introduce operational efficiencies, inform investment decisions, encourage conservation activities and install state-of-the-art environmental technologies to reduce their energy use and related carbon footprint. These efforts have been supported in part by funding under the Carbon Neutral Capital Program.

This report presents an overview of the actions taken and results achieved by B.C. public sector organizations during their seventh year of carbon neutrality. Results for the 2016 calendar year indicate decreases in energy emissions, which were down approximately 77,800 tonnes carbon dioxide equivalent (CO₂e) from 2010. Once normalized for weather conditions, the decrease is approximately 54,000 tonnes CO₂e relative to 2010, the equivalent of taking approximately 11,500 cars off the road.

In order to bring public sector emissions to net zero, a total of 622,758 tonnes of CO₂e offsets were retired. The corresponding offset investment supports innovative B.C.-based projects that create economic opportunities, and spurs the use and development of clean technologies across British Columbia.





VISION. PERSEVERANCE. LEADERSHIP.

2016 marks seven years of carbon neutral government in British Columbia.

The success of B.C.'s carbon neutral government program is founded on the commitment, innovation and partnership of the province's public sector organizations – our school districts, post-secondary institutions, health authorities, Crown corporations and government ministries and independent offices – in working to catalyze climate action.

For B.C.'s public sector, carbon neutrality is about approaching environmental responsibility in an integrated way. By embedding emissions-reduction goals and values into the very fabric of our organizations, carbon neutrality is creating not only operational change, but deep cultural change across the public sector – and throughout the province.

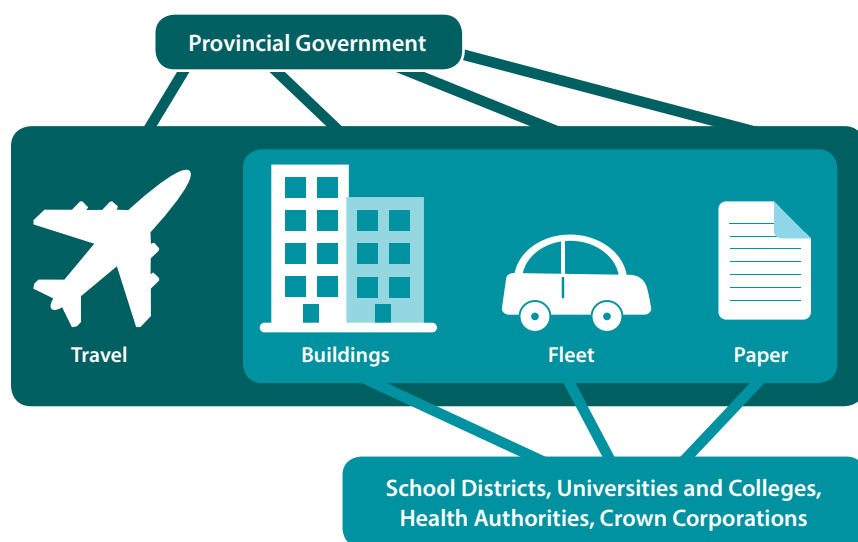
This report presents the results of the annual carbon neutral cycle, and it identifies some key success factors for achieving significant emissions reductions.

About Carbon Neutrality

CARBON NEUTRALITY is about climate action leadership and accountability. It's about taking responsibility for operational greenhouse gases (GHGs) by measuring emissions, reducing them as much as possible and reporting on outcomes. To achieve carbon neutrality – or net-zero carbon emissions – all remaining emissions are offset through investment in B.C.-based, GHG-reducing projects.

Since 2010, B.C.'s schools, hospitals, universities and colleges, Crown corporations and Provincial government (ministries and independent offices) have been carbon neutral in their operations – including emissions related to paper, fleets and buildings. Provincial government remains additionally carbon neutral in respect to business travel.

Reported Emissions



In 2016, eight B.C. public sector organizations were recognized by Canada's 100 Greenest Employers.

- BC Housing Management Commission
- BC Hydro
- BC Public Service
- Kwantlen Polytechnic University
- Surrey Schools
- UBC
- UNBC
- Provincial Health Services Authority

The Logic Behind Carbon Offsetting

A carbon offset represents a reduction in GHG emissions that can be used to compensate for, or offset, emissions from other sources.

B.C. invests in carbon offset projects developed in regions and sectors throughout the province. Each offset project reduces or sequesters GHGs. A reduction project may, for example, involve switching from fossil fuel to electricity in powering a natural gas processing plant. A sequestration project preserves or enhances forests that absorb carbon dioxide.

Offsetting is all about balance. Because our atmosphere is like an ocean of gases, a reduction of carbon emissions at any one location benefits the whole system. A project that reduces or sequesters GHGs in one area of the province, therefore, can be used to offset the emissions resulting from an activity elsewhere.

B.C.'s Public Sector by the Numbers



TransLink's Xcelsior Artic hybrid bus

Standardizing GHG Emissions Reporting

In accordance with international standards, emissions noted in this report are measured in tonnes CO₂e (carbon dioxide equivalent). Six gases are included in emission reporting in B.C.: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons (HFCs), sulphur hexafluoride and perfluorocarbons (PFCs). Each gas varies in its ability to trap heat in the atmosphere; this is known as its *global warming potential* (GWP).

Methane, for example, has a GWP of 25, indicating that, relative to carbon dioxide (CO₂), an equivalent mass of methane traps 25 times more heat in the atmosphere. In other words, releasing one tonne of methane is

equivalent to releasing 25 tonnes of CO₂. This can also be reported as 25 tonnes CO₂e.

2016 Results

Public sector emissions were down approximately 77,800 tonnes CO₂e, about 10 percent, from 2010. Once normalized for weather conditions, the decrease in B.C.'s total public sector emissions was approximately 54,000 tonnes CO₂e relative to 2010, the equivalent of taking approximately 11,500 cars off the road.* Approximately 28,500 tonnes CO₂e of this decrease was due to utilities generating cleaner electricity, with more hydroelectric and less thermal generation.



Vancouver Convention Centre

Verification

All public sector organizations follow the carbon neutral reporting cycle that includes measuring, reducing and offsetting emissions, as well as reporting annually. To ensure the integrity of the annual reports, public sector organizations self-certify that their emissions data is complete and accurate. Additionally, a number of organizations are selected each year for independent, third-party verification.

Verification reviews of the 2015 annual reports found no material

errors or inconsistencies in the submitted data. Some quality-control concerns were identified and have since been addressed by updating estimates with real data, cross-checking third-party invoices, and ensuring invoices are kept for seven years.

Since verification began in the 2011 reporting year, emissions data from 36 public sector organizations has been third-party verified.

* Environmental Protection Agency – [Greenhouse Gas Equivalencies Calculator](#)

Weather Normalization

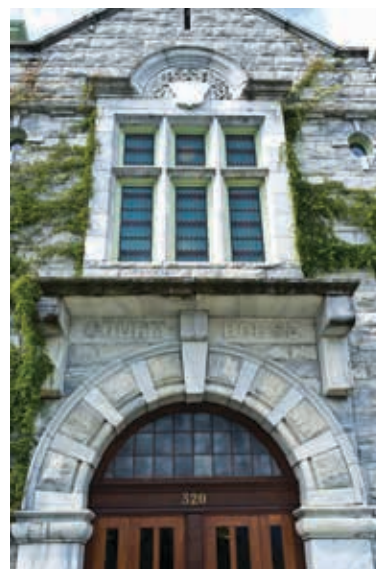
Buildings generate approximately 75 percent of B.C.'s total provincial public sector emissions. The year-to-year weather changes alter the heating and cooling requirements in buildings. To enable year-to-year comparison of building-related emissions, figures are adjusted to remove weather effects. This is known as *weather normalization*. Facilitating greater emissions reductions means understanding how buildings perform outside of weather-related impacts.

2016's Weather Impact

Weather in B.C. can be heavily influenced by large-scale phenomena called

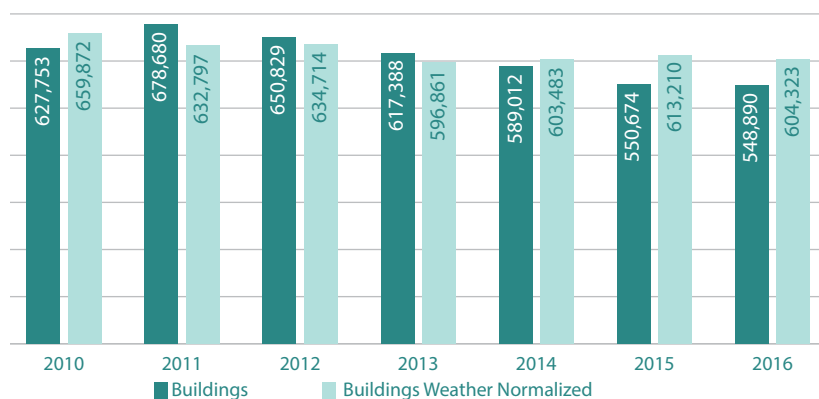
teleconnections. In 2016, one of these teleconnections, the El Niño Southern Oscillation (ENSO), dominated weather across the province. ENSO is comprised of two opposing phases – El Niño and La Niña. These phases typically last nine to twelve months, and occur on average every two to seven years. However, in 2016 B.C. transitioned out of a strong El Niño and into a moderate La Niña within the year. These phases caused much of B.C. to experience warmer-than-usual temperatures from January to March, and colder-than-usual temperatures in November and December.

To weather normalize building emissions, the average temperature profile for a 30-year period is used to calculate the number of days buildings use energy to heat or cool (based on temperatures above or below 15°C).

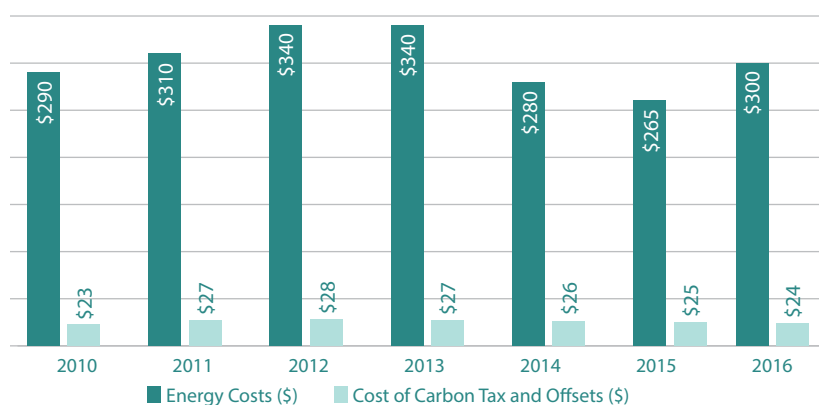


Nelson Law Courts
Photo credit: D. Craig

Building Emissions (tCO₂e) Across the Public Sector 2010–2016



Estimated Public Sector Building Energy Costs vs. Carbon Costs 2010–2016 (million)



Due to the assumptions necessary for estimating energy costs, all energy costs in this report are rounded to the nearest \$5 million.

2016 Emissions at a Glance: B.C.'s Public Sector

Total GHG emissions:
735,364 tonnes CO₂e

Emissions that do not require offsets:
111,488 tonnes CO₂e*

Total offsettable emissions:
623,876 tonnes CO₂e**

Carbon neutral capital funding distributed:
\$14,500,000

Offset investment:
\$15,596,900**

Total energy costs:
\$415,000,000***

* As per the Carbon Neutral Government Regulation, some of the reported emissions in the total do not require the purchase of offsets in order to reach carbon neutrality. These include emissions from mobile or stationary combustion of biomass as well as emissions from bus fleets.

** Total offsettable emissions do not include prior year adjustments made in 2016. Prior year adjustments were -1,118 tCO₂e. Therefore, the offsets retired were 622,758.

*** Energy costs from buildings and vehicles.

**** Fugitive emissions are GHGs unintentionally or incidentally released into the air, such as HFC-based refrigerants that leak from air conditioning equipment.

Total emissions for the public sector have decreased by nearly one percent since 2015 and by almost 10 percent since 2010, the first year of carbon neutral government. The most significant decreases were from reductions in business travel (26 percent) and buildings (12.5 percent), followed by paper use (12 percent).

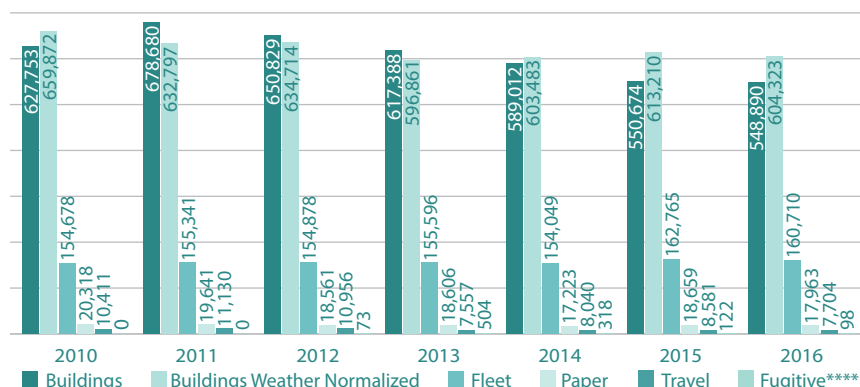
Climate action is happening across the public sector – from building upgrades to workplace engagement to leadership. The organizations that have seen the greatest reductions have integrated key success factors. The public sector stories highlighted in this report demonstrate the effectiveness of embedding these success factors into their organizations.

Carbon Neutral Capital Program

The Carbon Neutral Capital Program (CNCP) was introduced in 2012/13 to help school districts throughout B.C. implement energy-saving activities and technologies. In 2014/15, the CNCP was expanded to include funding for B.C.'s health authorities and post-secondary institutions. In 2016/17, a total of \$14.5 million was distributed to the public health, education and post-secondary sectors. Since its inception, the CNCP has distributed \$53.5 million to finance energy efficiency projects that will continue to reduce emissions and save money into the future.

If an error occurred in an emissions report from a previous year, it may have impacted an organization's offset payment. To solve this, an equal amount is added or subtracted from their current offset payment. This is called a *prior year adjustment*.

Total Emissions (tCO₂e) Across the Public Sector by Source 2010–2016



Total GHG emissions:

164,492 tonnes CO₂e

Emissions that do not
require offsets:

22,486 tonnes CO₂e*

Total offsettable
emissions:

142,006 tonnes CO₂e**

Carbon neutral capital
funding distributed:

\$5,000,000

Offset investment:

\$3,550,150**

Total energy costs:
\$80,000,000

* As per the Carbon Neutral Government Regulation, some of the reported emissions in the total do not require the purchase of offsets in order to reach carbon neutrality. This includes emissions from mobile or stationary combustion of biomass as well as emissions from bus fleets.

** This does not include prior year adjustments made in 2016.



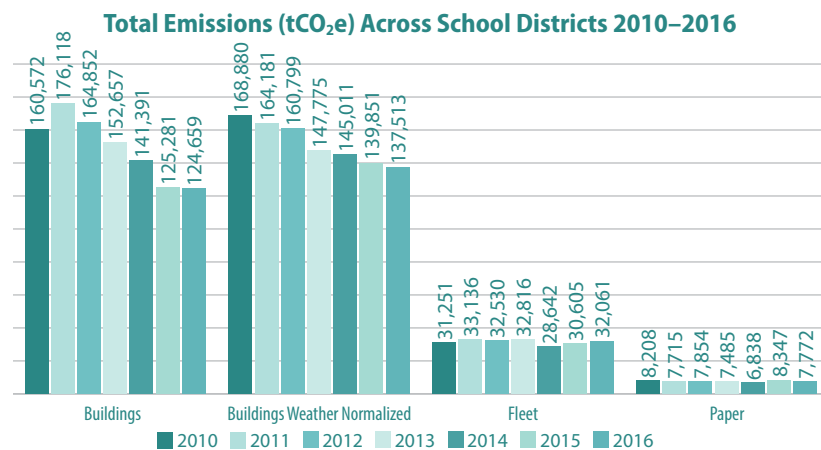
School District 36 Woodward Hill

B.C.'s School Districts

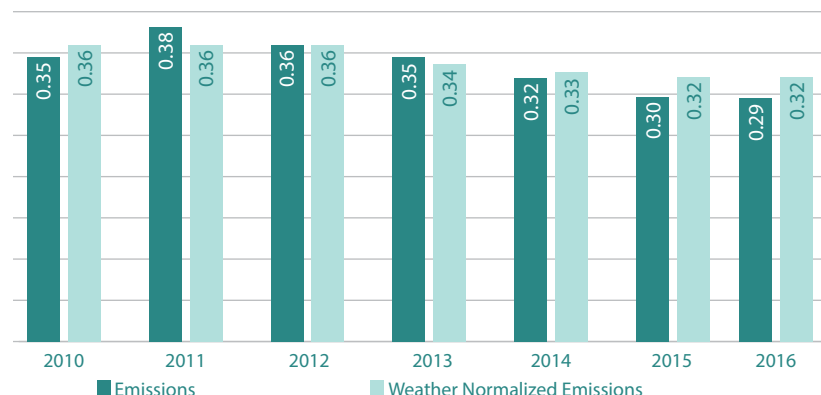
Total emissions for B.C.'s school districts remained relatively stable in 2016 as compared to 2015. Building emissions decreased by 2 percent after factoring in weather normalization. Overall, emissions are trending downward, with an 18 percent decrease since 2010.

Climate Action in B.C.'s Schools

Across B.C., schools continue to lead by example, demonstrating a commitment to climate action and to the environmental future of our students. Through the Carbon Neutral Capital Program (CNCP), school districts receive funding for energy efficiency projects in an amount equal to or greater than their offset investment. This money is reinvested in upgrades that will decrease greenhouse gas emissions. From 2012/13 to 2016/17, \$25 million from the Carbon Neutral Capital Program has been distributed to school districts for a variety of GHG-reducing projects. In 2016/17, CNCP funding helped six schools invest in direct digital controls for their HVAC (heating, ventilation and air conditioning) systems. Other schools have used the funding for clean energy alternatives, like the solar panel system at Penticton Secondary School. Such investments lead to lower emissions; this, in turn, helps reduce the number of carbon offsets required to achieve carbon neutrality.



Emissions (tCO₂e) Across School Districts per Student 2010–2016



Total GHG emissions:
217,462 tonnes CO₂e

**Emissions that do not
require offsets:**
1,490 tonnes CO₂e*

**Total offsettable
emissions:**
215,971 tonnes CO₂e**

**Carbon neutral capital
funding distributed:**
\$5,700,000

Offset investment:
\$5,399,275**

Total energy costs:
\$125,000,000

* As per the Carbon Neutral Government Regulation, some of the reported emissions in the total do not require the purchase of offsets in order to reach carbon neutrality. This includes emissions from mobile or stationary combustion of biomass as well as emissions from bus fleets.

** This does not include prior year adjustments made in 2016.



University Hospital of Northern British Columbia, Prince George

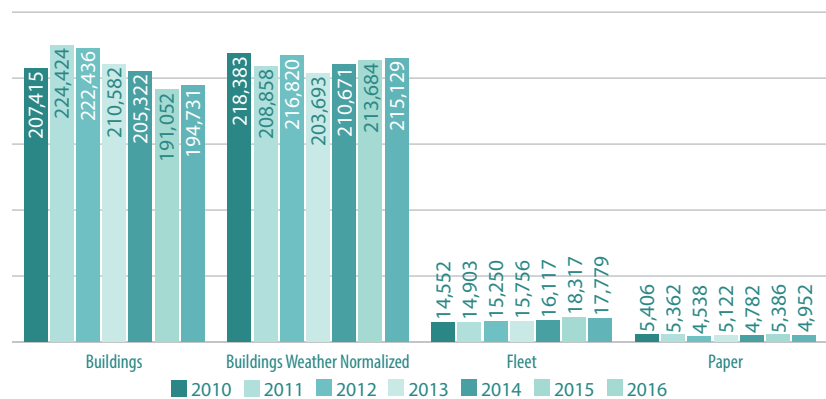
B.C.'s Health Authorities

Total emissions for B.C.'s health authorities increased marginally – by 1 percent between 2015 and 2016. However, the trend overall shows positive results – a reduction in emissions of 4 percent since the baseline year of 2010. Emissions per employee, an important emissions reduction indicator, have also decreased year over year, with a 20 percent decline between 2010 and 2016.

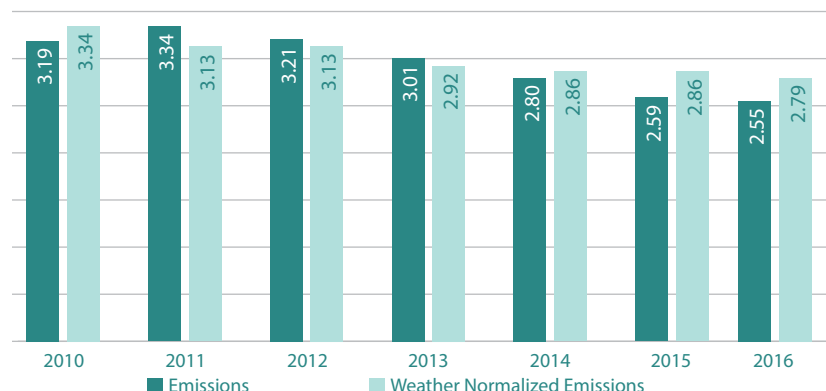
Climate Action in B.C.'s Health Sector

In 2014/15, the CNCP was expanded to include funding for B.C.'s health authorities and post-secondary institutions. A total of \$17.1 million has since been distributed to the public health sector. In 2016/17, the Provincial Health Services Authority used the CNCP funding to install a heat recovery chiller, new rear door cooling racks in the server room and other energy optimizing measures at the BC Cancer Research Centre. This project reduces emissions and saves money well into the future – creating savings that can be redirected into important health care services for British Columbians.

Total Emissions (tCO₂e) Across Health Authorities 2010–2016



**Estimated Health Sector Emissions (tCO₂e)
per Full Time Equivalent Employee (FTE) 2010–2016**



Total GHG emissions:
154,680 tonnes CO₂e

Emissions that do not
require offsets:
64,266 tonnes CO₂e*

Total offsettable
emissions:
90,414 tonnes CO₂e**

Offset investment:
\$2,260,350**

Total energy costs:
\$90,000,000

* As per the Carbon Neutral Government Regulation, some of the reported emissions in the total do not require the purchase of offsets in order to reach carbon neutrality. This includes emissions from mobile or stationary combustion of biomass as well as emissions from bus fleets.

** This does not include prior year adjustments made in 2016.



BC Place

B.C.'s Crown Corporations

Total emissions for B.C.'s Crown corporations rose by 3 percent in 2016 over the previous year due to an increase in building-related emissions.

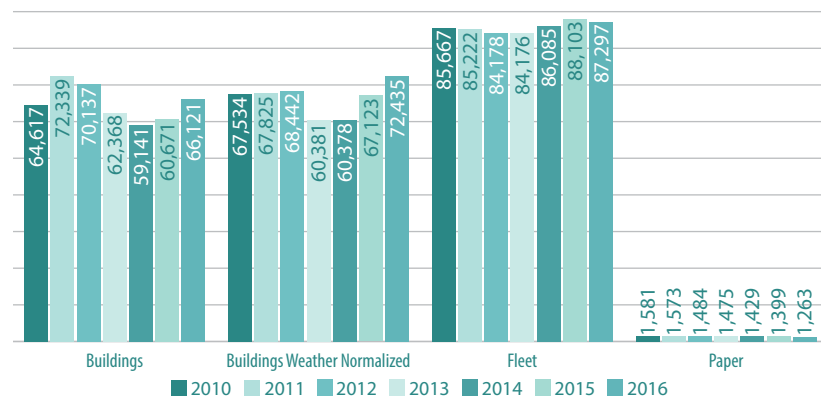
Climate Action in B.C.'s Crown Corporations

Many of B.C.'s Crown corporations and agencies, such as BC Housing Management Commission and the Royal BC Museum, serve the public on a daily basis. As such, they are ambassadors of our province and its values. By embracing sustainability, B.C.'s Crown corporations are showcasing our leadership as a province and reducing the emissions associated with the services they provide to British Columbians. In the case of BC Housing, the Energy Efficiency Retrofit Program offers non-profit housing providers additional funding to complete energy saving retrofits. Last year, this enabled approximately 22 electric and six gas-focused energy retrofit projects, for a total estimated savings of 681,200 kWh and 3,900 GJ respectively, representing approximately 200 tonnes of CO₂e.

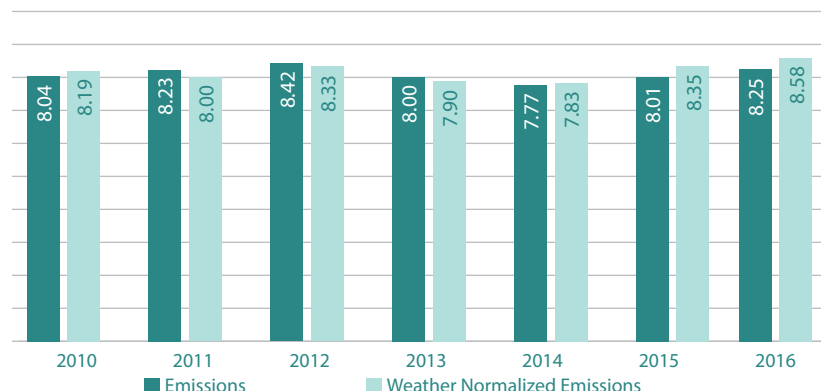


Royal BC Museum
Photo credit: D. Craig

Total Emissions (tCO₂e) Across Crown Corporations 2010–2016



Emissions (tCO₂e) Across Crown Corporations per FTE 2010–2016



Total GHG emissions:
138,022 tonnes CO₂e*

Emissions that do not
require offsets:
22,548 tonnes CO₂e**

Total offsettable
emissions:
115,474 tonnes CO₂e***

Offset investment:
\$2,886,850***

Carbon neutral capital
funding distributed:
\$3,800,000

Total energy costs:
\$85,000,000

* Emissions total includes 98 tCO₂e for fugitive emissions. Fugitive emissions are not included in the graphs as they are considered immaterial.

** As per the Carbon Neutral Government Regulation, some of the reported emissions in the total do not require the purchase of offsets in order to reach carbon neutrality. This includes emissions from mobile or stationary combustion of biomass as well as emissions from bus fleets.

*** This does not include prior year adjustments made in 2016.

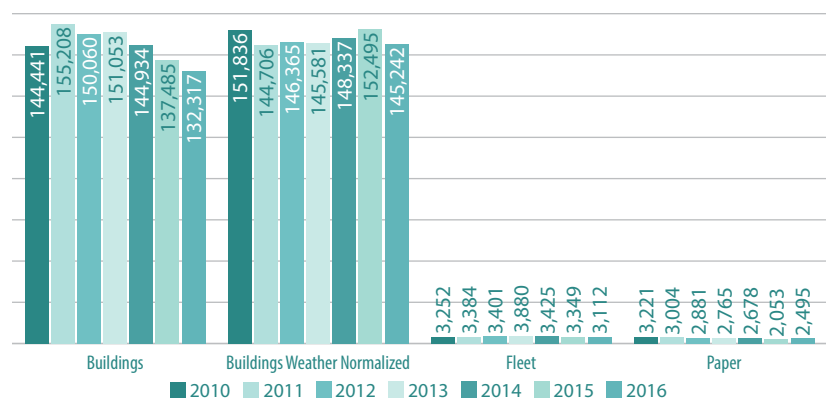
B.C.'s Universities and Colleges

Total emissions for B.C.'s universities and colleges have decreased by nearly 4 percent since 2015 and by more than 8 percent since 2010. Emissions per student have also decreased – by 9 percent since 2010.

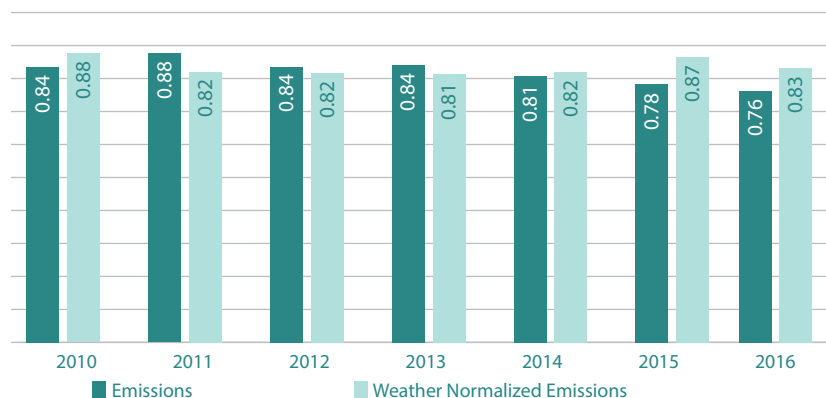
Climate Action in B.C.'s Post-Secondary Schools

With innovative projects like those funded through the CNCP, B.C.'s post-secondary institutions remain on the cutting edge of climate action. Since 2014/15, the first fiscal year of the expanded CNCP, \$11.4 million in provincial capital funding has been distributed to post-secondary institutions to support energy-saving and emissions-reducing initiatives. Projects such as Okanagan College's installation of high-efficiency boilers at the Kelowna campus will result in greenhouse gas reductions for years to come.

Total Emissions (tCO₂e) Across Universities and Colleges 2010–2016



Emissions (tCO₂e) Across Universities and Colleges per Student 2010–2016



Total GHG emissions:
60,708 tonnes CO₂e

Emissions that do not
require offsets:
696 tonnes CO₂e*

Total offsettable
emissions:
60,012 tonnes CO₂e**

Offset investment:
\$1,500,300**

Total energy costs:
\$35,000,000

* As per the Carbon Neutral Government Regulation, some of the reported emissions in the total do not require the purchase of offsets in order to reach carbon neutrality. This includes emissions from mobile or stationary combustion of biomass as well as emissions from bus fleets.

** This does not include prior year adjustments made in 2016.



Salmon Arm Law Courts and Municipal Hall

Provincial Government

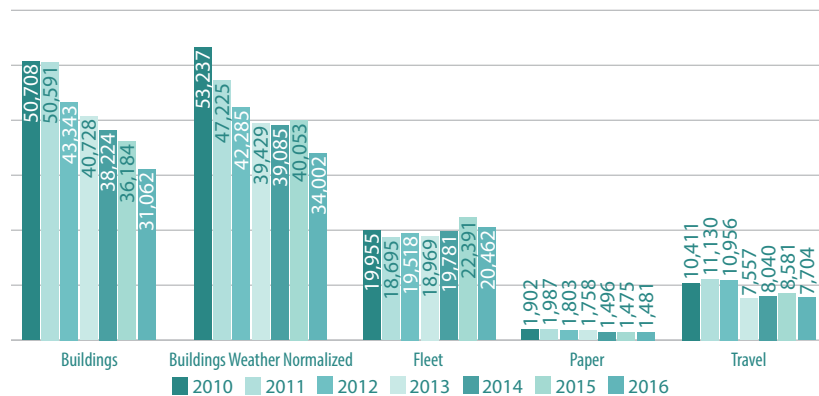
Climate Action in B.C.'s Provincial Government

The Government of B.C. is made up of ministries and independent offices that collectively employ more than 26,000 staff. A number of government initiatives serve to reduce emissions and conserve energy. These include the increased use of video conferencing in lieu of travel, ongoing implementation of Leading Workplace Strategies^{***}, paperless office initiatives, and green behavioural campaigns such as the annual Hibernation Challenge and Bike to Work Week. The Ministry of Citizens' Services (CITZ), which administers most government buildings, is dedicated to reducing energy consumption in its existing facilities. As well, it is committed to constructing new buildings that are certified at the LEED® Gold level, such as the women's unit at the Prince George Regional Correctional Centre.

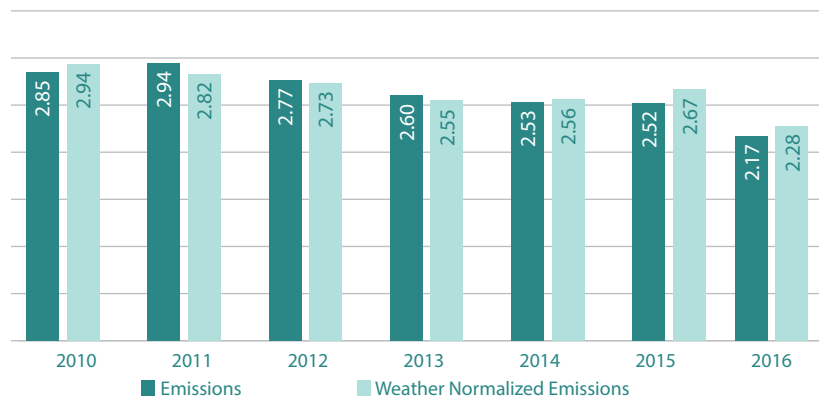
The provincial government's emissions decreased by 11 percent from 2015 to 2016. Weather-normalized emissions per employee decreased by 15 percent. Most of these significant reductions are attributed to a variety of measures undertaken by CITZ, ranging from operations and maintenance improvements to infrastructure investments.

***Leading Workplace Strategies (LWS), also known as Alternative Workplace Strategies, is a shift in the way office work is accommodated. Rather than traditional dedicated office space, LWS reflects greater worker mobility and more choice in work settings. <http://www2.gov.bc.ca/gov/content/governments/services-for-government/real-estate-space/workplace-planning-services>

Total Emissions (tCO₂e) Across Provincial Government 2010–2016



Emissions (tCO₂e) Across Provincial Government per FTE 2010–2016



Increasing Our Expertise in GHG Reduction

B.C.'S COMMITMENT TO CARBON NEUTRALITY has resulted in a fundamental shift in the way public sector organizations function. Seven years of carbon neutral operations have brought increased expertise in GHG reduction, as well as a significant repository of energy use data. This data is used to improve asset management, inform future investment decisions, track changes year over year and identify areas for improvement.

Over time and through experience, several key drivers have emerged that can be leveraged by the public sector to realize significant operational emissions reductions. Those groups that have achieved the greatest emissions reductions have embedded these **key success factors** into their organizations as a whole.



Hugh Keenleyside Dam, Castlegar

Key Success Factors in Achieving Emissions Reductions

Leadership Commitment

Is essential to the success of all environmental action. Ensures that carbon-neutral goals are integrated into plans and decisions, reinforced in strategic activities, and communicated often, both internally and externally.

Setting Goals

Encourages and guides staff toward sustainability and accelerates the adoption of emission-reducing behaviours and technologies.

Recognizing & Celebrating Achievements

Motivates decision-makers and keeps teams focused and inspired.

Creating a Sustainability Culture

Establishes the workplace as an incubator for innovative ideas, and makes sustainability the default for how things are done.

Harnessing Champions

Encourages staff to step up, innovate and implement sustainability initiatives.

Being Implementation-Ready

Ensures that emissions-reduction projects are ready to be carried out as soon as funding becomes available.

Being Aware of Funding Sources

Enables financing from different funding sources to be leveraged for larger projects.

Investing in Knowledge

Emphasizes the sharing of information and best practices, uncovers the benefits of investing in training and new technologies, and prioritizes sustainability-related skills in new hires.

Communicating Effectively

Forms the foundation of all other key success factors.

Emission Reduction Success Stories

Throughout the province, B.C.'s public sector organizations are making significant strides toward sustainability. By building awareness, instituting small daily conservation efforts and using state-of-the-art environmental technologies, B.C.'s public sector

is reducing emissions. For every one percent reduction in energy use, the public sector saves over \$4 million in annual energy costs – savings that are then reinvested into student programs, patient care and other important initiatives.

**\$4 MILLION
SAVED FOR EVERY
1% IMPROVEMENT**

BC Emergency Health Services – Investing in Emerging Technology

BC Emergency Health Services (BCEHS) operates the largest ambulance fleet in Canada and prides itself on being a leader in sustainability. This **leadership commitment** has led them to prioritize energy efficiency in their procurement processes. BCEHS's new aerodynamic ambulances, for example, reduce drag to improve fuel efficiency and lower emissions.

BCEHS is also **implementation-ready**. In gathering quotes for new ambulances, they asked manufacturers to include options

for idle-reduction technology. The proposed pricing allowed BCEHS to assess the return on investment so that they're able to commit to fleet-wide replacement when the time is right.

In addition, BCEHS understands the importance of **investing in knowledge**. Through robust data collection systems, they gain an understanding of fleet operating costs and ambulance lifecycles. Armed with the facts, they can make informed decisions that will maximize the efficiency of their fleet.

Idle Reduction Technology

Ambulances must often be left idling in order to maintain temperature and emergency lighting. With emissions-reduction in mind, BCEHS recognized an opportunity to implement an emerging technology: the EcoSmart idle reduction system.

When an ambulance is in park, EcoSmart automatically monitors the battery condition and patient compartment temperature. The system shuts down the idling engine when conditions are suitable and restarts the engine when necessary to re-achieve ideal conditions.

In 2016/17, EcoSmart-equipped vehicles accounted for almost half of the total distance driven by BCEHS ambulances. This brought annual savings of more than 57,000 litres of gasoline and 133 tonnes CO₂e.



Hwy 37 by Bowser Lake



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.

UNBC – \$1.1 Million in Energy-Efficiency Upgrades

By aligning carbon neutrality with its core mission, the University of Northern British Columbia has embedded a **culture of sustainability**. In 2007, UNBC adopted the trademark, Canada's Green University. This was both a recognition of its strengths, and a challenge to continuously improve to create a greener, more sustainable organization.

UNBC **recognizes and celebrates its achievements** during an annual Green Day event. In addition, UNBC has made **investing in knowledge** a key aspect of their sustainable development. The university has one of the highest proportions of environmental programs in Canada, and many faculty conduct research centred on sustainability.

Along with its **leadership commitment** in teaching and research, UNBC is dedicated to sustainable operations. Since 2011, an award-winning bioenergy plant has helped reduce the university's non-biogenic greenhouse gas emissions by 71 percent. And the energy management program has reduced electricity and heat consumption

by 20 percent and 10 percent respectively. More broadly, the Green University Planning Committee oversees the Green Fund, which provides up to \$45,000 each year to support social innovations and sustainable operations.

In terms of **setting goals**, UNBC recently updated its targets to reduce total energy consumption by 25 percent by 2020 compared to 2010. In order to do so, the university has developed a suite of **implementation-ready** energy-efficiency projects. The projects will be phased in over the next three years, and funded by the UNBC Energy Conservation Revolving Loan Fund.

The Revolving Loan Fund was created in 2012 from an initial seed of \$250,000 to support energy conservation projects. The utility cost savings are used to repay the loan. The Revolving Loan Fund has allowed for \$1.1 million in energy-efficiency upgrades at UNBC and has been leveraged to secure incentive funding from BC Hydro and Fortis BC.

Biomass Heating Expansion

In August 2016, UNBC commissioned a new low-temperature biomass district heating loop to serve its two student residences, its Enhanced Forestry Lab greenhouse, and its on-campus daycare. Using piping with a twin steel, fused high-density polyethylene jacket – the first of its kind in North America – the heating loop demonstrates UNBC's leadership in new technologies. As part of the university's Sustainable Communities Demonstration Project, the new district energy system will reduce emissions by 350 tonnes CO₂e annually and will save \$80,000 in energy costs each year. The system is anchored by a 400 kilowatt wood-pellet boiler, and will be backed up by the bioenergy plant. The project is being implemented in three phases to align with available resources.



Construction of the district energy system at UNBC

Carbon Offsets

Since the inception of B.C.'s carbon neutral government commitment, the government has purchased offsets from a total of 43 B.C.-based projects.

This investment in carbon offsets supports innovative projects that create economic opportunities across the province. These projects have spurred the use and development of clean technologies in municipal landfills, greenhouses, and oil and gas facilities. Investments made in lumber and paper mills throughout the province have directly bolstered B.C.-based clean technology firms, created new jobs, reduced wood waste, and expanded knowledge of renewable energy within the forestry sector.

Rigorous standards help ensure that B.C. offsets are of the highest quality. In order to qualify, developers must demonstrate that offset sales will help overcome barriers to implementing a project. This is to ensure that the emissions reductions

associated with each project go above and beyond normal business practices – a requirement common to leading offset systems worldwide.

Offset projects undergo two independent third-party audits. The first validates that the proposed project, if carried out as planned, will meet regulatory requirements and result in the projected GHG reductions. Once the project has been implemented, actual emission reductions are calculated and summarized in a project report. The second independent audit verifies these reported reductions and confirms that the project was carried out as described in the plan and that it met the requirements of the regulation.

If the project successfully passes the two-stage auditing process, the project developer is eligible to have offsets issued by the Ministry of Environment. Once issued on the B.C. Carbon Registry, these offsets are available for purchase.

Offset projects tied to B.C.'s carbon neutral government commitment contributed an estimated \$372.5 million to provincial GDP and supported the equivalent of 4,500 jobs* between 2008 and 2014.**

* Measured in person-years.

** Economic Impacts Analysis of B.C.'s Carbon Neutral Government Program. EcoResources. Dec. 1 2015, pages 13 & 14.

For the 2016 calendar year, a total of 622,758 tonnes CO₂e offsets sourced from 19 individual projects were used to reduce emissions from B.C.'s 126 public sector organizations to net zero.



ARC Resources natural gas processing facilities, Dawson Creek

Photo credit: ARC Resources

Offset Highlight – New Westminster Biomass Gasification System

Kruger Products L.P. is a B.C.-based manufacturer of tissue and paper towels. For decades, Kruger has embraced sustainability initiatives, implementing some of the paper industry's first recycling programs, installing multi-stage wastewater treatment facilities, and, in New Westminster, introducing the industry's first gasification system.

Until 2008, the mill used natural-gas-fired boilers to create steam. But through the combined incentive of offset revenue and a reduced annual carbon tax bill, the company was able to install a multi-million-dollar biomass gasification system developed by B.C.-based Nexterra Systems.

Using the new system, Kruger has replaced much of its natural gas

use with a locally sourced wood waste that would otherwise have gone to the landfill. The wood waste is processed in the gasifier's carefully controlled, low-oxygen, high-heat environment, where it is converted into a clean-burning synthetic gas ("syngas") and ash. The syngas moves to an oxidizer where it is combusted, and the resulting heat goes to the boilers where it generates steam. The small amount of ash is discarded.

Because it uses an electrostatic precipitator, Kruger's system also minimizes the particulate matter emitted into the local environment.

With its clean-burning biomass gasification system, the mill has reduced its annual GHG emissions by over 50 percent.



Photo credit: Nexterra Systems

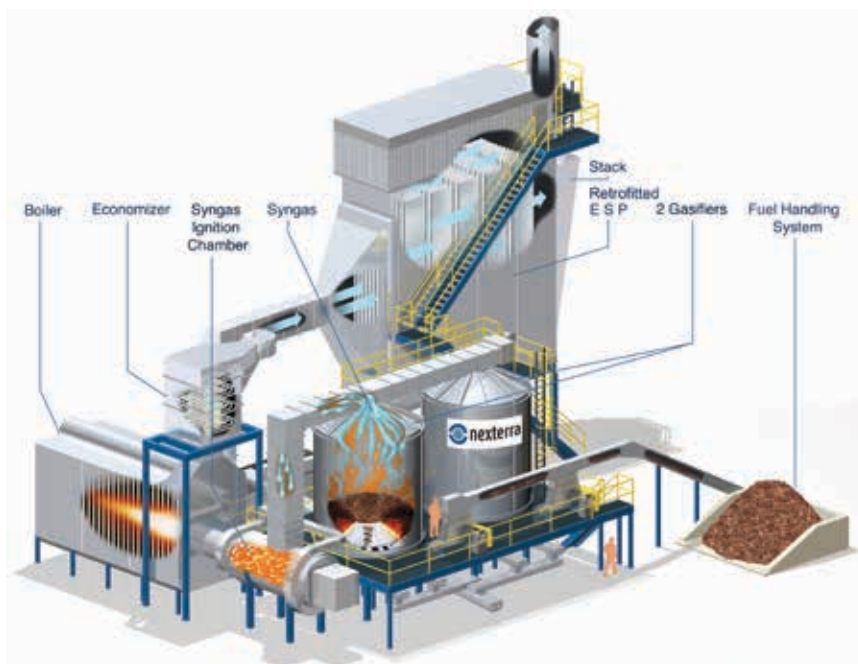


Photo credit: Nexterra Systems

Nexterra gasification system at Kruger Products tissue mill in New Westminster, B.C.

Appendices



1. 2016 Offset Portfolio

The B.C. public sector purchases offsets through an open procurement call. B.C. takes a targeted approach to developing its offset portfolio. Each chosen project must support one or more of the following government objectives:

- Acquiring lower-cost offsets to effectively manage public resources
- Addressing key provincial emission reduction challenges such as natural gas upstream emissions and forest degradation
- Building capacity for clean, community projects
- Achieving key priorities such as advancing clean technology and transforming B.C. to a low-carbon economy
- Two projects help create green communities through infrastructure improvements
- Three projects directly support B.C.'s clean technology sector
- All projects align with key government priorities to transform B.C. to a low-carbon economy

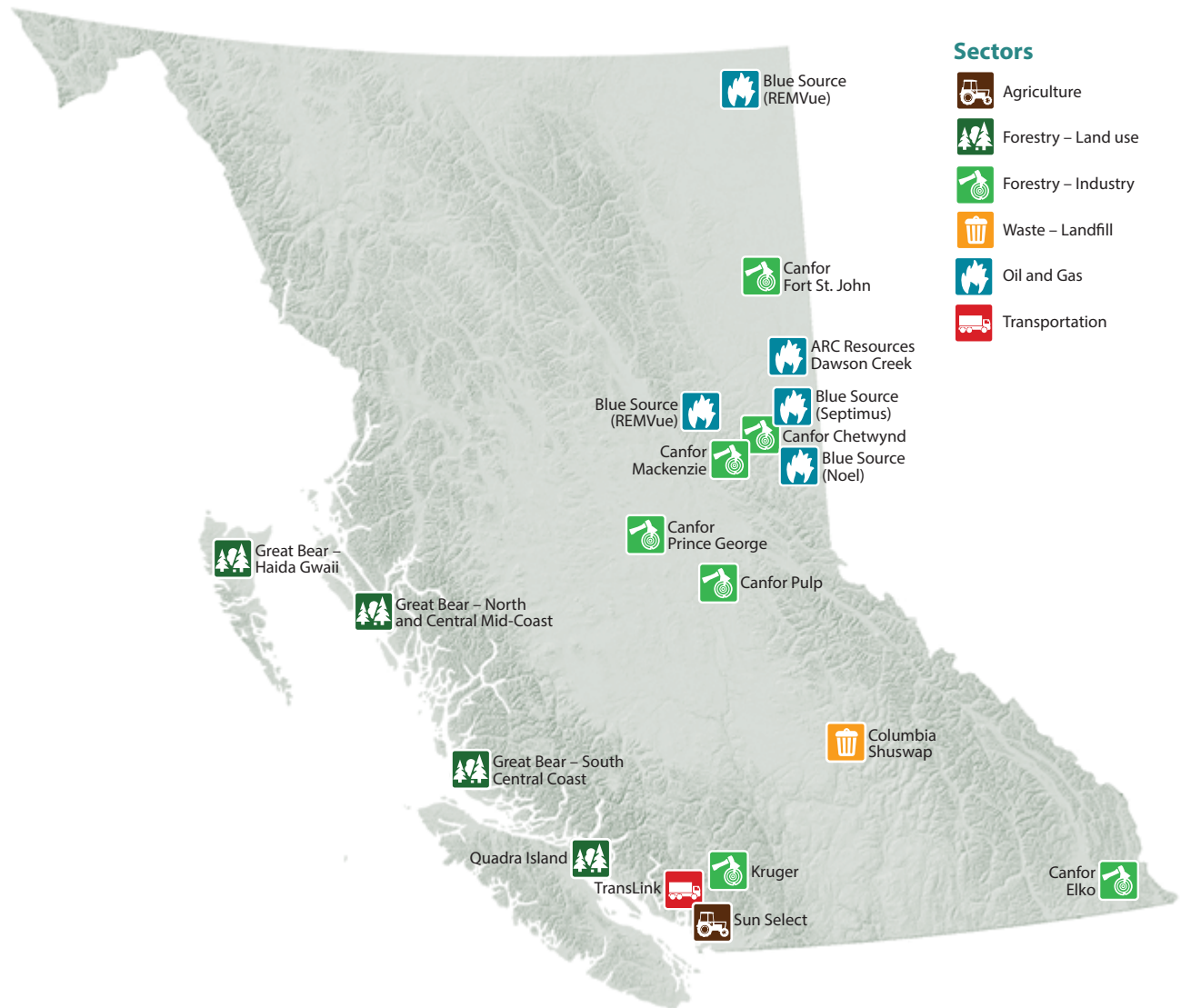
In 2016, more than \$7.4 million was invested in 19 projects that advanced at least one – and often more than one – of these key objectives.

- Eight projects address key provincial emission-reduction challenges



Photo credit: Province of B.C.

2016 Offset Project Map



Project List

Thompson Okanagan

- Landfill Gas Collection, Columbia Shuswap Regional District

Cariboo

- Sawmill Fuel Switch, Canfor Prince George
- Energy Efficiency and Innovative Fuel Switch, Canfor Pulp

Lower Mainland/ Southwest

- Bus Fuel Efficiency, TransLink
- Biomass Fuel Switch, Sun Select Delta
- Clean Tech Gasification, Kruger

Vancouver Island/Coast

- Improved Forest Management, Great Bear – South Central Coast
- Forest Conservation, Quadra Island

North Coast

- Improved Forest Management, Great Bear – North and Central Mid-Coast
- Improved Forest Management, Great Bear – Haida Gwaii

Northeast

- Gas Production Electrification, Blue Source (Noel)
- Gas Processing Electrification, Blue Source (Septimus)

Northeast (continued)

- Engine Fuel Gas Management, Blue Source (REMVue) – 2 projects
- Low Emission Facility, ARC Resources
- Sawmill Fuel Switch, Canfor Chetwynd
- Sawmill Fuel Switch, Canfor Mackenzie
- Sawmill Fuel Switch, Canfor Fort St. John
- Kootenays
- Sawmill Fuel Switch, Canfor Elko

2016 Offset Projects

In any single year, B.C. has between 14 and 25 projects in its carbon offset portfolio. In total, these projects have resulted in approximately 4.9 million tonnes of CO₂e emission reductions in B.C. since 2010. That's the equivalent of taking about 1 million cars off the road for a year, or of consuming 11.4 million fewer barrels of crude oil.

Presented below is the 2016 portfolio of offset projects that contributed to the carbon neutral government commitment.



Sector: Transportation

Bus Fuel Efficiency Project TransLink, Metro Vancouver

Through the low-carbon vehicle offset project, TransLink replaced conventional diesel buses with more fuel-efficient diesel hybrids. Since transportation accounts for the largest share of GHG emissions in B.C., encouraging the use of fuel-efficient vehicles is good for the environment, for transit users, and for the taxpayers who fund public transit.

Price per tonne CO₂e: \$13

Total tonnes: 4,220

Total value: \$54,860

ADVANCING B.C.'S OBJECTIVES

- ✓ Green communities
- ✓ Clean technology
- ✓ Green economy



Photo credit: TransLink

Sector: Forestry – Industry

Clean Tech Biomass Gasification Kruger Products, New Westminster

Kruger Products L.P. installed the Canadian pulp and paper industry's first biomass gasification unit, which decreases the New Westminster tissue mill's carbon emissions by over 50 percent annually. Developed by Vancouver's Nexterra Systems, the unit converts local wood waste into clean burning synthetic gas to provide steam for the mill. Use of this renewable resource provides a competitive advantage for the B.C. industry and underscores the province's potential to become a world leader in clean energy.

Price per tonne CO₂e: \$15
Total tonnes: 5,500
Total value: \$82,500

ADVANCING B.C.'S OBJECTIVES

- ✓ Clean technology
- ✓ Green economy



Photo credit: Nexterra Systems

Sector: Forestry – Industry

Natural Gas to Biomass Fuel Switch Canfor B.C. Sawmills – Elko, Prince George, Fort St. John, Chetwynd, Mackenzie

Canfor has installed a technology for drying lumber that is fueled by residual bark from its own sawmills. Developed by Prince George-based DelTech, the new technology distributes heat to dry lumber through a thermal oil heat energy system. To remove the particulate matter generated through wood combustion, DelTech also supplied Canfor with multicyclone and high-voltage two-field electrostatic precipitators. Eight Canfor locations have now installed the system; five of these benefit from offset revenue. In using the residual wood generated on site to fuel the new systems, transportation-related emissions (to truck the residuals off site) and storage-related emissions (to stockpile residuals on site) are also reduced. These offset projects are a model for reducing industrial GHG emissions in a way that supports clean, local technologies and creates new economic opportunities for B.C. communities.

Price per tonne CO₂e: \$10
Total tonnes: 14,295
Total value: \$142,950

ADVANCING B.C.'S OBJECTIVES

- ✓ Green economy



Photo credit: Province of B.C.



Photo credit: Canfor

Sector: Forestry – Industry

Energy Efficiency and Innovative Fuel Switch Canfor Pulp, Prince George

In northern British Columbia, Canfor Pulp Limited reduced its use of fossil fuels through two projects. In the first, the Northwood plant in Prince George upgraded a recovery boiler to a more efficient unit. In the second, the plant improved the efficiency of particulate removal from a power boiler. The result is a marked improvement in local air quality and a reduction in natural gas consumption.

Price per tonne CO₂e: \$15
Total tonnes: 70,407
Total value: \$1,030,759

ADVANCING B.C.'S OBJECTIVES

✓ Green economy



Photo credit: Canfor Pulp

Sector: Agriculture

Switching to Biomass/Installing Energy Curtains Sun Select Delta, Delta

Sun Select Delta, a greenhouse grower of pesticide-free vegetables, has taken important steps to reduce its emissions. By installing a biomass boiler and insulating curtains to help heat its greenhouses, Sun Select significantly reduces its dependence on natural gas. The project included the installation of an innovative scrubbing technology that upgrades CO₂ from the combustion of biomass to food-grade quality, then pumps it back into the greenhouses. This technology was developed and built in the Lower Mainland by ProSelect Gas Treating Inc.

Price per tonne CO₂e: \$11
Total tonnes: 4,000
Total value: \$44,000

ADVANCING B.C.'S OBJECTIVES

✓ Green economy



Photo credit: Province of B.C.

Sector: Waste – Landfill

Landfill Gas Collection Columbia Shuswap Regional District, Salmon Arm

The Columbia Shuswap Regional District (CSRD) created an offset project in 2010 to capture and destroy methane (natural gas) produced from decomposing organic waste in the landfill. They then partnered with FortisBC to upgrade the gas in order to inject it into their pipeline as renewable natural gas. This award-winning project captures and converts enough energy to heat over 300 homes. The CSRD also collects the rainwater that percolates through the landfill to irrigate poplar trees on the site.

Price per tonne CO₂e: \$13

Total tonnes: 7,627

Total value: \$99,151

ADVANCING B.C.'S OBJECTIVES

- ✓ Green communities
- ✓ Green economy



Photo credit: Columbia Shuswap Regional District

Sector: Forestry – Land use

Forest Conservation Quadra Island

Quadra Island is located on the west coast of B.C. between the mainland and Vancouver Island. The conservation project area is adjacent to two B.C. marine parks and only accessible by boat, helicopter or foot. The sale of offsets allowed the project to overcome the last financial hurdle that had persisted for almost 20 years to acquire the land from a timber harvesting company. Instead of logged areas and recreational lots, the area is now a park enjoyed by boaters, residents and visitors.

Price per tonne CO₂e: \$12

Total tonnes: 1,000

Total value: \$12,000

ADVANCING B.C.'S OBJECTIVES

- ✓ Reduction challenges
- ✓ Green economy



Photo credit: Province of B.C.

Sector: Forestry – Land use

Forest Conservation/Improved Forest Management Great Bear Rainforest, North and Central Mid-Coast

B.C.'s magnificent Great Bear Rainforest is renowned for its immense and ancient stands of trees. This project, a result of significant effort and collaboration by local First Nations communities and the B.C. government, reduces timber harvest levels and safeguards forests. This not only protects existing carbon stocks, but also reduces emissions from harvesting, road building and other operations. Additionally, the project protects regional ecosystems and important cultural heritage values. Offset revenues contribute directly to the development of a conservation economy in the area, co-managed by the B.C. government and local First Nations.

Price per tonne CO₂e: \$9

Total tonnes: 79,301

Total value: \$713,709

ADVANCING B.C.'S OBJECTIVES

- ✓ Reduction challenges
- ✓ Green economy



Photo credit: Province of B.C.

Sector: Forestry – Land use

Forest Conservation/Improved Forest Management Great Bear Rainforest, Haida Gwaii

The Great Bear (Haida Gwaii) forest carbon project reduces timber harvest levels, converting land that was previously available for logging to protected forests. A result of significant effort and collaboration by local First Nations communities and the B.C. government, the project sequesters more carbon, protects healthy ecosystems and supports important Haida cultural sites. Revenues from this project contribute directly to the development of a conservation economy in the area, co-managed by the B.C. government and local First Nations.

Price per tonne CO₂e: \$12

Total tonnes: 276,258

Total value: \$3,315,096

ADVANCING B.C.'S OBJECTIVES

- ✓ Reduction challenges
- ✓ Green economy



Photo credit: Province of B.C.

Sector: 🌲 Forestry – Land use

Forest Conservation/Improved Forest Management Great Bear Rainforest, South Central Coast

This project reduces timber harvest levels and protects forests in B.C.'s magnificent Great Bear Rainforest, renowned for its immense, ancient stands of trees. A result of significant effort and collaboration by local First Nations communities and the B.C. government, the project protects extensive areas that were previously slated for logging and increases carbon stocks as the forest continues to grow. Revenues from this project contribute directly to the development of a conservation economy, representing a shift from the historic patterns of the extraction-based economy.

Price per tonne CO₂e: \$9

Total tonnes: 33,000

Total value: \$297,000

ADVANCING B.C.'S OBJECTIVES

- ✓ Reduction challenges
- ✓ Green economy



Photo credit: Province of B.C.

Sector: 🏭 Oil and Gas

Low Emissions Facility ARC Resources, Dawson Creek

ARC Resources adopted two methods to decrease its reliance on readily-available natural gas and reduce emissions. It replaced natural gas engines used for compression applications with electric motors, and implemented an instrument air system to use compressed air instead of pressurized natural gas in pneumatic control devices and instruments. In 2013, ARC won an award from the Canadian Association of Petroleum Producers for these emission-reducing practices.

Price per tonne CO₂e: \$14

Total tonnes: 79,950

Total value: \$1,119,300

ADVANCING B.C.'S OBJECTIVES

- ✓ Reduction challenges
- ✓ Green economy



Photo credit: ARC Resources

Sector: Oil and Gas

Electrification of Gas Production Plant Blue Source, Dawson Creek

The Noel electrification project reduces GHG emissions by using grid electricity instead of natural gas to power compressors and other equipment at the company's gas production facilities. Significant effort and expense were required to construct the electricity transmission infrastructure that allowed the facilities to connect to the BC Hydro grid. Once connected, electric-drive equipment was installed to replace conventional natural-gas-powered gear. Since B.C. electricity has a much lower GHG intensity than natural gas combustion, this project has significantly reduced GHG emissions.

Price per tonne CO₂e: \$10

Total tonnes: 9,425

Total value: \$94,250

ADVANCING B.C.'S OBJECTIVES

- ✓ Reduction challenges
- ✓ Green economy



Photo credit: Province of B.C.

Sector: Oil and Gas

Engine Fuel Gas Management Blue Source, Northeastern BC

Blue Source Canada and the offset project participants are helping the natural gas industry lower its emissions through the use of two innovative new technologies by REM Technology Inc. The REMVue® AFR is an engine management system that enables engines that compress natural gas to run more efficiently and reliably while lowering the emissions created in the process. SlipStream® is designed to capture vented hydrocarbons, like methane, and utilize them as fuel to power natural gas engines or process burners. Not only does this technology significantly reduce greenhouse gases, it decreases fuel costs for engines and burners by up to 50 percent.

Price per tonne CO₂e: \$11

Total tonnes: 3,000

Total value: \$33,000

ADVANCING B.C.'S OBJECTIVES

- ✓ Clean technology
- ✓ Reduction challenges
- ✓ Green economy



Photo credits: REM Technology

Sector: Oil and Gas

Electrification of Gas Processing Plant Blue Source, Taylor

The Septimus electrification project reduces GHG emissions by using grid electricity instead of natural gas to power compressors and other equipment at the Septimus gas processing plant. The project was part of a new-build construction and involved the entire facility. It included the construction of 19.4 kilometres of transmission lines, a new substation and other infrastructure to connect to the BC Hydro grid. Since B.C. electricity has a much lower GHG intensity than natural gas combustion, this project has significantly reduced greenhouse gas emissions.

Price per tonne CO₂e: \$10

Total tonnes: 34,775

Total value: \$347,750

ADVANCING B.C.'S OBJECTIVES

- ✓ Reduction challenges
- ✓ Green economy



Photo credit: CNRL

2. Public Sector Emissions and Offset Investments

The total emissions reported meet the reporting requirements set by the Carbon Neutral Government Regulation of the *Greenhouse Gas Reduction Targets Act*. As per the regulation, some of the reported emissions in the total do not require the purchase of offsets in order to reach carbon neutrality. This includes emissions from buses (e.g. school buses and BC Transit buses) as well as emissions from mobile or stationary combustion of biomass or biofuels. For information on how the B.C. public sector measures emissions, please visit the [2016/17 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions](#).

ORGANIZATION	Total Emissions (tCO ₂ e)*	Total Offsettable Emissions (tCO ₂ e)**	Offset Investment*
PUBLIC SECTOR TOTAL	735,364	623,876	\$15,596,900
PROVINCIAL GOVERNMENT TOTAL	60,708	60,012	\$1,500,300
CROWN CORPORATIONS TOTAL	154,680	90,414	\$2,260,350
BC Assessment Authority	414	409	\$10,225
BC Council for International Education	7	7	\$175
BC Games Society	1	1	\$25
BC Housing Management Commission	24,861	24,836	\$620,900
BC Hydro	29,923	29,135	\$728,375
BC Innovation Council	2	2	\$50
BC Liquor Distribution Branch	3,156	3,136	\$78,400
BC Lottery Corporation	833	831	\$20,775
BC Pavilion Corporation	3,929	3,928	\$98,200
BC Transit	64,520	1,124	\$28,100
British Columbia Securities Commission	240	240	\$6,000
Columbia Basin Trust	21	21	\$525
Columbia Power Corporation	38	37	\$925
Community Living British Columbia	568	565	\$14,125
Destination BC	96	96	\$2,400
First People's Heritage, Language & Culture Council	2	2	\$50
Forestry Innovation Investment	178	178	\$4,450
Industry Training Authority	69	69	\$1,725
Insurance Corporation of British Columbia	25,167	25,151	\$628,775
Knowledge Network Corporation	95	95	\$2,375
Legal Services Society	51	51	\$1,275
Oil and Gas Commission	422	413	\$10,325
Partnerships BC	4	4	\$100
Private Career Training Institutions Agency	3	3	\$75
Royal BC Museum	78	77	\$1,925
Transportation Investment Corporation	4	4	\$100

ORGANIZATION	Total Emissions (tCO ₂ e)*	Total Offsettable Emissions (tCO ₂ e)**	Offset Investment*
HEALTH AUTHORITY TOTAL	217,462	215,971	\$5,399,275
BC Emergency Health Services	15,924	15,457	\$386,425
Fraser Health Authority	37,144	37,124	\$928,100
Interior Health Authority	41,078	41,019	\$1,025,475
Louis Brier Home & Hospital	611	611	\$15,275
Menno Hospital	493	493	\$12,325
Mount St. Mary Hospital	401	401	\$10,025
Nisga'a Valley Health Authority	213	208	\$5,200
Northern Health Authority	21,105	21,081	\$527,025
Providence Health Care	10,975	10,972	\$274,300
Provincial Health Services Authority	18,312	18,297	\$457,425
St. Joseph's General Hospital	1,209	1,207	\$30,175
St. Michael's Centre	364	364	\$9,100
Vancouver Coastal Health Authority	40,223	40,206	\$1,005,150
Vancouver Island Health Authority	29,110	28,241	\$706,025
UNIVERSITIES AND COLLEGES TOTAL	138,022	115,474	\$2,886,850
British Columbia Institute of Technology	8,422	8,418	\$210,450
Camosun College	1,586	1,585	\$39,625
Capilano University	1,328	1,326	\$33,150
College of New Caledonia	2,583	2,581	\$64,525
College of the Rockies	725	712	\$17,800
Douglas College	2,138	2,138	\$53,450
Emily Carr University of Art and Design	722	722	\$18,050
Justice Institute of BC	605	602	\$15,050
Kwantlen Polytechnic University	2,276	2,275	\$56,875
Langara College	1,485	1,485	\$37,125
Nicola Valley Institute of Technology	312	311	\$7,775
North Island College	881	880	\$22,000
Northern Lights College	1,652	1,648	\$41,200

* Due to rounding, numbers presented throughout this appendix may not add up precisely to the totals provided.


** Due to routine adjustments to prior year emissions, the Total 2016 Offsettable Emissions do not include adjustments (-1118 tCO₂e) made in 2016 to prior years. With prior year adjustments included, a total of 622,758 tCO₂e of offsets were retired in 2016.

ORGANIZATION	Total Emissions (tCO ₂ e)*	Total Offsettable Emissions (tCO ₂ e)**	Offset Investment*
Northwest Community College	1,337	1,333	\$33,325
Okanagan College	1,400	1,397	\$34,925
Royal Roads University	1,013	1,010	\$25,250
Selkirk College	989	987	\$24,675
Simon Fraser University	14,803	14,793	\$369,825
Thompson Rivers University	3,359	3,106	\$77,650
University of British Columbia – Total	63,639	47,897	\$1,197,425
University of Northern British Columbia	8,117	1,660	\$41,500
University of The Fraser Valley	2,331	2,330	\$58,250
University of Victoria	11,470	11,454	\$286,350
Vancouver Community College	2,077	2,077	\$51,925
Vancouver Island University	2,773	2,743	\$68,575
SCHOOL DISTRICTS TOTAL	164,492	142,006	\$3,550,150
School District 05 – Southeast Kootenay	2,901	2,318	\$57,950
School District 06 – Rocky Mountain	1,884	1,323	\$33,075
School District 08 – Kootenay Lake	2,911	1,912	\$47,800
School District 10 – Arrow Lakes (Nakusp)	365	252	\$6,300
School District 19 – Revelstoke	254	172	\$4,300
School District 20 – Kootenay-Columbia	1,765	1,457	\$36,425
School District 22 – Vernon	2,843	2,228	\$55,700
School District 23 – Central Okanagan (Kelowna)	5,480	4,129	\$103,225
School District 27 – Cariboo-Chilcotin	3,878	2,457	\$61,425
School District 28 – Quesnel	1,774	1,044	\$26,100
School District 33 – Chilliwack	3,180	2,413	\$60,325
School District 34 – Abbotsford	3,767	2,762	\$69,050
School District 35 – Langley	6,022	5,475	\$136,875
School District 36 – Surrey	16,206	15,945	\$398,625
School District 37 – Delta	2,596	2,500	\$62,500
School District 38 – Richmond	5,194	4,952	\$123,800
School District 39 – Vancouver	14,733	14,709	\$367,725
School District 40 – New Westminster	1,658	1,655	\$41,375
School District 41 – Burnaby	4,446	4,438	\$110,950
School District 42 – Maple Ridge	3,329	3,323	\$83,075
School District 43 – Coquitlam	7,463	7,436	\$185,900
School District 44 – North Vancouver	3,527	3,479	\$86,975
School District 45 – West Vancouver	1,216	1,216	\$30,400
School District 46 – Sunshine Coast	688	685	\$17,125

ORGANIZATION	Total Emissions (tCO ₂ e)*	Total Offsettable Emissions (tCO ₂ e)**	Offset Investment*
School District 47 – Powell River	1,111	889	\$22,225
School District 48 – Sea to Sky	1,828	1,363	\$34,075
School District 49 – Central Coast	370	306	\$7,650
School District 50 – Haida Gwaii	555	548	\$13,700
School District 51 – Boundary	898	628	\$15,700
School District 52 – Prince Rupert	751	731	\$18,275
School District 53 – Okanagan Similkameen	856	647	\$16,175
School District 54 – Bulkley Valley	1,179	796	\$19,900
School District 57 – Prince George	5,096	5,084	\$127,100
School District 58 – Nicola-Similkameen	1,053	827	\$20,675
School District 59 – Peace River South (Dawson Creek)	3,340	2,442	\$61,050
School District 60 – Peace River North (Fort St. John)	4,122	3,007	\$75,175
School District 61 – Greater Victoria	4,467	4,449	\$111,225
School District 62 – Sooke	2,361	1,684	\$42,100
School District 63 – Saanich	1,838	1,434	\$35,850
School District 64 – Gulf Islands	336	171	\$4,275
School District 67 – Okanagan Skaha (Penticton)	1,538	1,448	\$36,200
School District 68 – Nanaimo-Ladysmith	3,472	2,902	\$72,550
School District 69 – Qualicum	1,850	1,376	\$34,400
School District 70 – Alberni	988	876	\$21,900
School District 71 – Comox Valley	2,031	2,026	\$50,650
School District 72 – Campbell River	2,174	1,817	\$45,425
School District 73 – Kamloops / Thompson	5,352	3,714	\$92,850
School District 74 – Gold Trail	1,079	642	\$16,050
School District 75 – Mission	1,832	1,475	\$36,875
School District 78 – Fraser-Cascade	985	770	\$19,250
School District 79 – Cowichan Valley	2,129	1,409	\$35,225
School District 81 – Fort Nelson	544	536	\$13,400
School District 82 – Coast Mountain	2,511	2,489	\$62,225
School District 83 – North Okanagan-Shuswap	3,255	1,968	\$49,200
School District 84 – Vancouver Island West	205	176	\$4,400
School District 85 – Vancouver Island North	644	501	\$12,525
School District 87 – Stikine	324	323	\$8,075
School District 91 – Nechako Lakes	3,116	2,127	\$53,175
School District 92 – Nisga'a	165	85	\$2,125
School District 93 – Conseil Francophone	2,060	2,060	\$51,500

* Due to rounding, numbers presented throughout this appendix may not add up precisely to the totals provided.

** Due to routine adjustments to prior year emissions, the Total 2016 Offsettable Emissions do not include adjustments (-1118 tCO₂e) made in 2016 to prior years. With prior year adjustments included, a total of 622,758 tCO₂e of offsets were retired in 2016.



Back cover: A map of UNBC's Energy Initiative. The blue straws represent the new Sustainable Communities Demonstration Project and the blue paper the volume of natural gas emissions from UNBC residences that will be largely displaced when the project is completed. The yellow straws represent the main district energy system on campus and the yellow paper represents the volume of natural gas emissions displaced. The red paper represents the volume of residual natural gas emissions still produced on campus. *Photo credit: UNBC*

