2021 Public Sector Organization Climate Change Accountability Report

Fraser Health

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Declaration Statement

This Climate Change Accountability Report for the 2021 calendar year period summarizes Fraser Health's greenhouse gas emissions profile, the total offsets to reach net-zero emissions, the actions taken in 2021 to reduce emissions, and plans to continue reducing emissions in 2022 and beyond.

By June 30, 2022, Fraser Health's Climate Change Accountability Report will be posted on the provincial government's Carbon Neutral Government website : https://www2.gov.bc.ca/gov/content/environment/climate-change/public-sector/cnar in order to meet legislative requirements, as well as on our website: bcgreencare.ca

Retirement of Offsets

In accordance with the requirements of the *Climate Change Accountability Act* and Carbon Neutral Government regulation, Fraser Health is responsible for arranging the retirement of the offsets obligation reported for the 2021 calendar year together with any adjustments reported for past calendar years. Fraser Health hereby agrees that in exchange for the Ministry of Environment and Climate Change Strategy's guarantee that these offsets are retired on the Organization's behalf, Fraser Health 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.

The cover photos are architectural renderings of Royal Columbian Hospital's phase two redevelopment (top) and Burnaby Hospital's new Keith and Betty Beedie Pavilion (bottom) to be completed in 2026 (fraserhealth.ca)

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Executive Summary

Executive Summary:
Fraser Health Carbon Neutral Action Report 2021

Victoria Lee, President and Chief Executive Officer

I am proud to present Fraser Health's 2021 Climate Change Accountability Report.

This marks the 12th consecutive year we have achieved carbon neutrality as part of the Province of British Columbia's public sector commitment to net-zero greenhouse gas emissions. The health care system is a significant contributor to emissions, and as such, we must do everything we can to mitigate further climate change and adapt our systems and people for the changes that are inevitable.

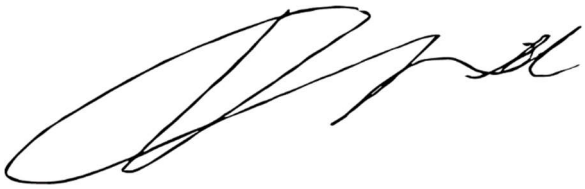
Fraser Health's total greenhouse gas emissions in 2021 were 41,203 tonnes of carbon dioxide equivalent, a 3.4 percent increase from 39,862 tonnes in 2020. The increase in carbon emissions was primarily due to actions we took to respond to the pandemic such as increasing fresh air ventilation to our sites; and climate-related events such as the heat dome, heavy rainfall and extended cold weather, which increased demands on our heating and cooling systems.

In order to balance these emissions, we purchased carbon offsets from the Ministry of Environment and Climate Change Strategy at a total cost of $1,034,400.

In 2021, we successfully implemented several emission reduction projects, including 21 building mechanical and lighting retrofit projects. These are estimated to save 6.2 gigawatt hours (GWh) or 22,325 gigajoules (GJ) of energy, reducing our carbon footprint by 1,083 tonnes of CO2 per year.

Our staff and medical staff are engaged in climate action programs such as the Green+Leaders program and continue to focus on advancing sustainability practices within the health system. We are building on efforts and actively pursuing ways to reduce our waste, practice environmentally preferable purchasing, and plan for climate resilience and adaptation. We have added an objective within our 2022/23 Fraser Health Together priorities to "*deliver on Fraser Health's net zero carbon commitment"* and this will be tracked through our regular performance review process.

I want to acknowledge Fraser Health staff, medical staff, volunteers and partners for the work they have contributed to help reduce Fraser Health's carbon footprint. By working together and identifying the actions we are able to control and change, we can transform our health system so it is not only resilient to current and future threats, but also environmentally sustainable for healthy people and a healthy planet.



Dr. Victoria Lee

President and Chief Executive Officer
Fraser Health

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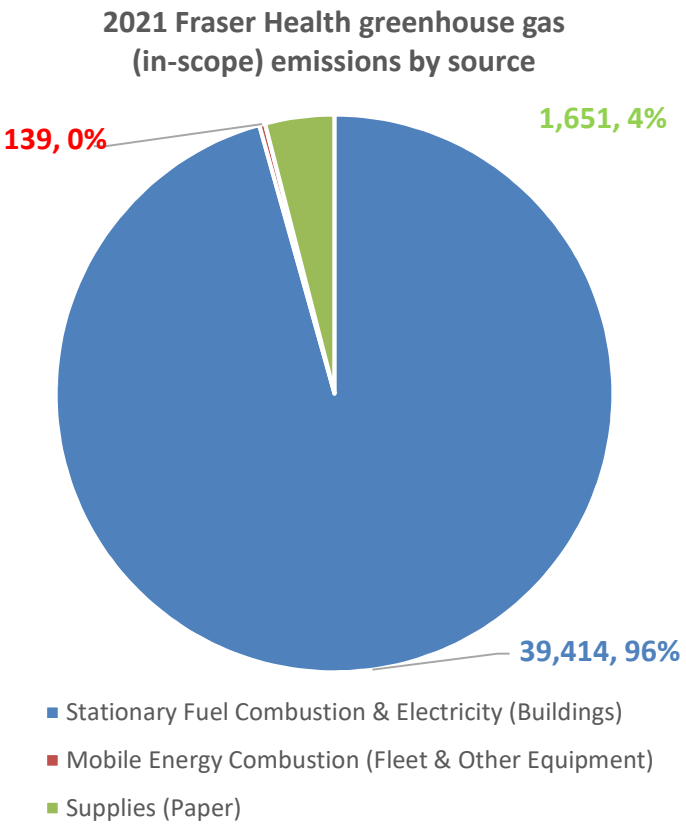
Our CO_2 footprint

Summary of 2021 greenhouse gas emissions and offsets applied to become carbon neutral

We report our carbon footprint based on guidelines provided by the Carbon Neutral Government Regulation and Climate Action Secretariat in British Columbia.

The Climate Action Secretariat uses various elements of reporting, based on the Greenhouse Gas Protocol Corporate Standard, which has classified carbon reporting into three scopes. Of these three scopes and various elements within each scope, the Climate Action Secretariat has determined that Fraser Health's carbon footprint comprises of six different greenhouse gases that are converted to tonnes of carbon dioxide equivalent (tCO_2e). The main sources of emissions are categorized into three main groups:

- Stationary fuel combustion and electricity (buildings)
- Mobile fleet combustion (fleet and other equipment)
- Supplies (paper)



The total emissions for 2021 offsets was 41,203 tCO2e. As shown in the chart, 96 per cent of Fraser Health's in-scope emissions are attributed to the stationary fuel combustion and purchased energy (electricity) from Fraser Health owned and leased buildings.

To become carbon neutral in 2021, Fraser Health purchased carbon offsets from the Ministry of Environment and Climate Change Strategy. Fraser Health's 2021 total offsets were 41,376 tCO2e, which includes an adjustment for data corrections for 2021, at a total cost of $1,034,400.

The table below shows the breakdown of emissions and offsets for 2021.

***Fraser Health* 2021 GHG emissions and offsets**	
GHG emissions created in calendar year 2021	
Total emissions (tCO_2e)	*41,228*
Total $bioCO_2$	*24.9*
Total offsets (tCO_2e)	*41,203*
Adjustments to offset required GHG emissions reported in prior years (2018 and 2019)	
Total offsets adjustment (tCO_2e)	*173*
Grand total offsets for the 2021 reporting year	
Grand total offsets (tCO_2e) to be retired for 2021 reporting Year	*41,376*
Offset investment ($25 per tCO_2e)	*$1,034,400*

Notes for above table (provided by the Climate Action Secretariat):
i. BioCO2 is included in total emissions but not total offsets.
ii. Emissions and offset investment amounts will be validated by Climate Action Secretariat [CAS] prior to distributing invoices.
iii. You must round "Grand total offsets to be retired" to a whole number (no decimal places) before multiplying by $25 (e.g., 43.2 = 43, 43.5 = 44).

The carbon emissions reported are not adjusted for changes in weather temperature or usable space. Stationary fuel (natural gas) emissions comprise the majority of the overall building emissions. This is due to the lower mainland having a climate that predominately requires heating to satisfy internal building temperatures. Although the priority climate mitigation actions are focused on natural gas combustion reductions, there are many drivers to continue reducing purchased energy and other emission sources.

Changes to Fraser Health's portfolio

Fraser Health's usable facility space has increased by 37 per cent since the 2007 base reporting year. This was largely due to the construction of Abbotsford Regional Hospital and Cancer Centre in 2009, Surrey's Jim Pattison Outpatient Care and Surgery Centre in 2012, Surrey Memorial Hospital's Critical Care Tower in 2014 and the completed construction of the Mental Health and Substance Use Wellness Centre on the Royal Columbian Hospital campus in New Westminster in 2020.

Fraser Health Portfolio							
BUILDINGS, FTE AND WEATHER	2007	2016	2017	2018	2019	2020	2021
Distinct Fraser Health Buildings:	n/a	153	147	162	163	172	174
% Owned:	n/a	81%	83%	83%	82%	82%	83%
% Leased:	n/a	19%	17%	17%	18%	18%	17%
Usable Square Meters[1]:	538,274	686,942	676,239	669,951	694,631	726,495	736,881
Full-Time Employee Equivalents[2]:	14,507	18,461	18,495	18,853	19,287	20,895	22,912
Weather (Heating Degree Days[3]:	2,870	2,537	2,922	2,768	2,837	2,754	2,875

Notes for above table:

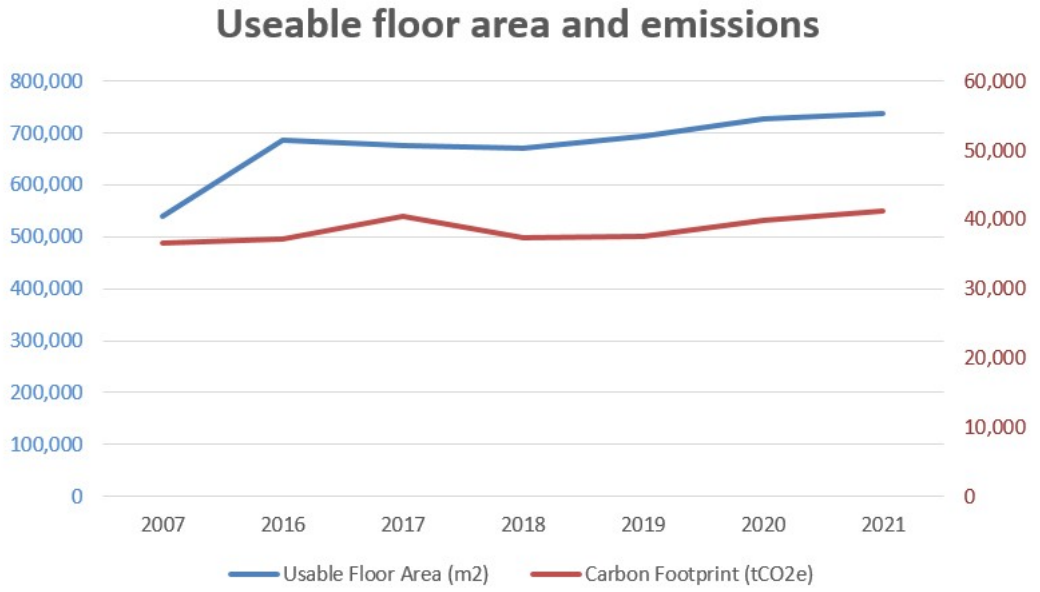
[1] Usable area excludes roof tops, interstitial spaces, and parking areas.

[2] Full-Time Employee data was provided by Health Employers Association of BC.

[3] Heating Degree Days (HDDs) are based on YVR Airport data from Environment Canada and reflect the demand for heating.

Since 2007, Fraser Health's overall carbon footprint has increased, but at a much slower rate than floor area and staff increases. As of 2021, emissions per full-time employee equivalent (1.80 tCO_2e/FTE) have decreased by 29 per cent since 2007, and emissions per unit of floor area (0.06 tCO_2e/m^2) has decreased 18 per cent since 2007.

The carbon emissions reported are not adjusted for changes in weather. Heating Degree Days (HDDs) is a measure of the demand for energy required to heat a building. Emissions per HDD is a metric intended to summarize a building's overall efficiency in delivering heating. Fraser Health's 2021 emissions per HDD are 12 per cent lower than the baseline year.



Fraser Health								
Our Carbon Footprint (in tCO_2e)		2007	2016	2017	2018	2019	2020	2021
tCO_2e	**Mobile Fuel Combustion:**	136	114	100	109	71	76	144
	Stationary Fuel Combustion and purchased Energy (electricity):	35,404	35,948	39,324	35,898	36,019	38,317	39,433
	Supplies (paper):	1,056	1,081	1,123	1,377	1,439	1,483	1,651
	Carbon Footprint[1]:	**36,596**	**37,143**	**40,547**	**37,384**	**37,529**	**39,876**	41228
	Emissions not requiring Offsets[2]:	-8	-20	-22	-36	-39	-15	-25
	Carbon Offsets:	**36,587**	**37,124**	**40,525**	**37,348**	**37,489**	**39,861**	**41,203**
KPIs	Emissions per Full-Time Employee (tCO2e/FTE)	2.52	2.01	2.19	1.98	1.95	1.91	1.80
	Emissions per Facility Space (tCO2e/m2)	0.07	0.05	0.06	0.06	0.05	0.05	0.06
	Emissions per Heating Degree Day (tCO2e/HDD)	12.75	14.63	13.87	13.49	13.22	14.47	14.33

Notes for above table:

[1] As outlined in the Carbon Neutral Government Regulation of the Climate Change Accountability Act, some emissions do not require offsets.

[2] It is estimated that fugitive emissions from cooling equipment comprised less than 0.01% of Fraser Health's total emissions. For this reason, emissions from this source have been deemed out-of-scope and have not been included in our total greenhouse gas emissions profile.

Actions taken to reduce our CO_2 footprint

Stationary emissions (buildings)

- Reduced environmental impact by **initiating 21 retrofit measures** with a total estimated energy savings of 6.2 GWh (22,325 GJ), resulting in greenhouse gas savings of 1,083 tCO_2e per year.

- **Utilized the Carbon Neutral Capital Program** to fund the energy/greenhouse gas emission reduction projects at Eagle Ridge Hospital, Langley Memorial Hospital, Heritage Village and Chilliwack General Hospital. Approximately $3.5 million of Carbon Neutral Capital Program funds, along with internal capital funds and incentives, were invested in 2021-2022.

- **Waste heat recovery:** Ongoing process to introduce heat pump applications such as energy recovery, low-temperature to high-temperature conversion, and various heating/cooling applications to projects at Mission Memorial Hospital, Fraser Canyon Hospital and Ridge Meadows Hospital.

- **Invested $436,000 from the Green Revolving Fund** in energy saving studies and lighting upgrade projects 2021-2022.

- **Completed lighting energy efficiency projects** at Cottage and Worthington Pavilions and Fraser Canyon Hospital.

- **Completed continuous building energy optimization refresh program** at Eagle Ridge Hospital, Mission Memorial Hospital and The Residence in Mission to maximize the efficiency of the building's heating/cooling/ventilation control.

- **Completed full electrification project.** Replaced gas-fired furnaces with heat pumps at the William Rudd long term care facility at Queens Park Care Centre, and upgraded residence room thermal comfort and ventilation. Building on a 2013 solar thermal water heating project, this site no longer produces carbon emissions.

- **Continued to roll out the engagement strategy** with Facilities Maintenance and Operation (FMO) teams. The strategy focuses on energy performance, emission reduction, identifying conservation opportunities, and optimizing existing heating or cooling plants or equipment. Partnered with Asset Risk and Quality: Technical Services (ARQTS) team on the long term care indoor air quality improvement projects and found opportunities in heat recovery and energy efficiency improvement.

- **Continued to embed sustainability in the organization's culture** by supporting staff engagement initiatives such as the Green+Leaders program, GreenCare survey and GreenCare community website.

Mobile fleet and other vehicles combustion

- Fraser Health now has **75 electric vehicle charging stalls** primarily for employees. From the GreenCare survey, commuting by electric vehicle has increased from 3% to 8% of commutes (compared to 2021).

- **Continued the free shuttle transport service** for family members, ambulatory patients, and employees in Surrey Memorial Hospital, Royal Columbian Hospital and Burnaby Hospital. A second shuttle was added to Royal Columbian Hospital at the end of 2021. Ridership was recorded at 100,974 trips, an increase of 29% over 2020.

- Fraser Health encourages **active and clean modes of transportation** and has secured bicycle storage along with showers at 11 sites as well as 508 bike parking stalls across 25 sites.

- In 2021, Fraser Health hosted ***Go By Bike Week*** education stations at Surrey Memorial Hospital, Royal Columbian Hospital and Burnaby Hospital. Staff have access to the *Sustainable Transportation Series* and other online resources through the GreenCare website.

- **The Fraser Health Transit Incentive Program (TIP)** continued to provide employees with a 15 per cent monthly transit pass incentive to encourage the use of transit instead of single occupancy vehicles. In 2021, the average number of staff subscriptions was 255.

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Supplies (paper)

- **GreenCare Community** website continues to provide inspiration, tips and toolkits to reduce waste, including paper use.

- In partnership with other B.C. health authorities, Provincial Health Services Authority (PHSA) identified the benefits of purchasing post-consumer recycled (PCR) paper as opposed to virgin paper with the aim of reducing environmental impacts such as carbon emissions, water consumption and air pollution. PHSA continues to work with suppliers and vendors to identify PCR paper options at reasonable prices and identify ways to formally increase the volume of PCR paper in inventory.

- Engaging relevant departments across the health authorities is one of the identified ways to act towards formally increasing the volume of PCR paper in inventory.

- As part of the Green+Leaders program, PHSA provides paperless meeting toolkits to encourage and support eliminating the practice of printing documents to hand out at meetings.

Future actions to reduce our CO_2 footprint

In-scope emissions

The majority of Fraser Health's carbon footprint is related to stationary fuel combustion from its owned and leased buildings. Natural gas is the predominant fossil fuel used for space heating, hot water, and process loads in our stationary combustion plants. Although our priority actions focus on our natural gas combustion plant, we are also motivated to reduce purchased energy (electricity) and other in-scope emission sources.

Stationary fuel combustion and electricity (buildings)

- **Review greenhouse gas performance accountability options and target design standards** such as Leadership in Energy and Environmental Design (LEED) with new construction and expansion project teams.
- Set up short-term and long-term plans to achieve **new greenhouse gas emission reduction targets** as per CleanBC, starting with a survey of all domestic hot water heating systems for possible fuel switching.
- Engage in new construction and major renovation projects to **provide stewardship of the new Health Capital Policy Manual chapters** (Carbon Neutral and Climate Resilient Health Care Facilities and Environmental Sustainability and LEED Gold Certification). These chapters were used for Burnaby Hospital redevelopment, Royal Columbian Hospital redevelopment, the new Surrey Hospital and for the business plans for several new long-term care facilities, with the intent to ensure that health care related buildings meet the highest standards for environmental and human health, performance efficiency, and financial investment.
- Building partnerships with cities and municipalities to **investigate district energy system opportunities** that enable alternative energy solutions for existing buildings or new construction.
- Plan and implement greenhouse gas or energy reduction projects in our existing buildings portfolio by using the **Carbon Neutral Capital Program**, supplementing with internal capital funds and incentives from BC Hydro and FortisBC.
- **Continue the optimization of mechanical plants, lighting, and building controls** in our existing building portfolio.
- **Reinvesting electricity savings** from the previous fiscal year to supplement the Green Revolving Fund and invest in electricity reduction projects.
- **Undertaking existing site energy studies** with support from Facilities Maintenance Operations teams and external consultants to identify greenhouse gas/energy reduction opportunities**.**
- **Collaborate with other departments** to identify greenhouse gas reduction opportunities and track building performance.
- Continue to **engage and educate Fraser Health staff and medical staff** through the Green+Leaders program and refreshed GreenCare website.

Mobile combustion (fleet and other vehicles)

- In partnership with other health authorities, an electric vehicle baseline and feasibility study was completed. In addition to staff and visitor vehicle charging, this study also included fleet electrification with the goal to inform a regional Electric Vehicle strategy to reduce emissions from mobile sources.

Supplies (paper)

- Continue to engage with BC Clinical and Support Services stakeholders and our paper suppliers to increase proportion of post-consumer recycling paper available for ordering.

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Public sector leadership

Climate Risk Management

B.C.'s Climate Change Accountability Act gave equal importance to climate risk management alongside greenhouse gas emission reductions. Fraser Health is committed to:

- Demonstrate public sector leadership and achieve new greenhouse gas emission reduction targets, as per the CleanBC plan. The CleanBC plan was developed by the provincial government in 2018 as a pathway to achieve the province's legislated climate targets. CleanBC Roadmap was released in 2021 to provide a clear articulation of where we need to expand and accelerate the action to reduce greenhouse gas emissions.

- Report climate risks and actions to reduce risks in the Fraser Health Climate Change Accountability Report.

- Conduct net-zero energy emission assessments for capital projects, as recommended by the Ministry of Health (2018).

- Produce 10-year emission reduction and adaptation plans, as per the Climate Leadership Plan (2016).

Climate risk and resilience actions taken by Fraser Health in 2021 included:

- Completed a climate vulnerability and capacity assessment and climate change and health adaptation framework through the **HealthADAPT project**, in collaboration with Vancouver Coastal Health Population and Public Health and Health Emergency Management BC (HEMBC).

- Completed climate hazard exposure screens and climate risk assessments for capital project designs at acute and long-term care facilities.

- Developed **Low Carbon Resilience and Environmental Sustainability Guidelines** for new construction.

- Completed a **physical risk report** for numerous Fraser Health facilities to understand potential risk costs under changing climate conditions.

Other Sustainability Initiatives

Environmental sustainability actions taken by Fraser Health in 2021 included:

- **Submitting Wastewater Pollution Prevention Plan reports** for nine Fraser Health sites as required by Metro Vancouver's Hospital Bylaw No. 319, highlighting actions underway to improve the quality of wastewater.

- **Refreshing the GreenCare website**, which is a resource for the Fraser Health staff, including the Green+Leaders network and a place to communicate and celebrate all efforts. Two-hundred and ninety-seven Fraser Health staff are registered to receive updates from the network, including stories, invites to events and lunch and learns, network opportunities, information on grants, funding and more.

- **Continued support of staff champions through the Green+Leaders program** through training, resources and recognition. In 2021, two new Fraser Health staff joined the Green+Leaders program, for a total of 162 since the program began in 2007.

- Fraser Health staff accessed **opportunities to further their knowledge about environmental sustainability and to take action**. Opportunities included a three-part series on sustainable transportation methods that included hospital shuttles, car share and cycling solutions; a dialogue series on healthy and green buildings; and lunch and learn events on topics such as planetary health.

- **Complying with a standardized recycling program** at all Fraser Health facilities**,** which includes mixed containers, mixed paper, organic waste and batteries. Some sites also recycle expanded polystyrene, pallet wrap, printer cartridges, mattresses, scrap metal, lighting and others. Recycling was temporarily paused during the pandemic but restarted in November 2021. Each facility has a target of 50 per cent waste diversion by 2030.

- In 2021, 1,538 Fraser Health staff took the **Waste Management Basics Learning Module** and a facility waste assessment was completed at Burnaby Hospital.

Feature story: Putting (steam) pressure on carbon emissions

When we think about a smooth hospital operation, consistent steam quality might not be the first thing that comes to mind. But steam is critical: it's used for sterilizing operating room equipment, high temperature wash cycles for medical equipment, maintaining humidity of indoor environments for comfort and infection control, and for heating at some hospital sites.

At Ridge Meadows Hospital, there is a 34-year-old Cleaver Brooks gas-fired steam boiler that has been vital to the site's many operations. However, it became clear in 2021 that it was time for an upgrade; the existing burner controls were worn and becoming obsolete and the boiler's energy efficiency wasn't meeting today's standards.

In response, the Energy and Environmental Sustainability team (EES) initiated an upgrade of the steam boiler, which in turn lowered gas consumption, carbon emissions and utility costs, extending the life of the boiler. The project took five months to complete and is eligible for an incentive from Fortis.

The boiler upgrade included replacing the mechanical burner control system with a new digital system that offers automatic control and precision. "I'm happy with it," said Ridge Meadows Hospital chief engineer, Andrew Paxton. "We now have a solid boiler that is fully operational, with parts that are replaceable if need be."

In addition to these upgrades, Facilities Maintenance and Operations (FMO) engineers can now receive critical alarms on pagers, helping operators respond to issues in a timely manner, a key feature for a team that works hard around the clock to maintain essential hospital systems.

The $82,000 project was funded by the provincial Carbon Neutral Capital Project program. It was completed in spring 2022 and although the emissions savings are low (annual savings of 3.6 tonnes of CO_2 and 4% natural gas), this is still considered a win for EES's energy and carbon portfolio, due to proactive and successful engagement with FMO. Projects like this support Fraser Health's 2022/23's net-zero carbon strategy with a key result to *"Reduce Green House Gas Emissions intensity (equivalent tonnes CO_2 per sq. m.) by one per cent in owned and operated facilities by quarter four."*

Given the success of this project — and the positive response from FMO team members — the EES team is exploring similar upgrades at other Fraser Health hospitals, including the three large steam boilers at Surrey Memorial Hospital.

Introducing new equipment can often add complexity to the work of FMO teams, who are responsible for operating and maintaining the equipment. In this case, the opposite is true. The upgrade simplifies their work and supports FMO staff to fulfill their mission — a gratifying outcome for the EES and FMO teams, and a win for the environment.

The Ridge Meadows Hospital Facilities Maintenance and Operations team stand with the vendor rep from Combustion Control Inc (third from left), in front of the newly installed steam boiler control panel, following a training session on new burner controls.