

2020 Public Sector Organization Climate Change Accountability Report Fraser Health Authority



Declaration Statement

This Climate Change Accountability Report for the period January 1, 2020 to December 31, 2020 summarizes Fraser Health's emissions profile, the total offsets to reach net-zero emissions, the actions taken in 2020 to reduce greenhouse gas emissions, and plans to continue reducing emissions in 2021 and beyond.

By June 30, 2021 Fraser Health's final Climate Change Accountability Report will be posted on the BC Government CNG website to meet legislative requirements, as well as at 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 2020 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 ensuring 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 photo is the new Mental Health and Substance Wellness Centre on Royal Columbian Hospital campus in New Westminster (taken by Jeson Mak in 2021).

Executive Summary



Executive Summary: Fraser Health Carbon Neutral Action Report 2020

Victoria Lee, President and Chief Executive Officer

I am proud to present Fraser Health's 2020 Climate Change Accountability Report.

This marks the eleventh consecutive year we have achieved carbon neutrality as part of the Province of British Columbia's public sector commitment to net-zero emissions.

Health care is an energy-intensive industry that continues to grow with expanding and aging populations. Fraser Health's 2020 total emission was 39,861 tonnes of carbon dioxide equivalent. To counteract the 2020 CO₂ emissions that we were unable to reduce through conservation measures, we purchased carbon offsets from the Ministry of Environment at a total cost of \$998,800.

2020 was an extraordinary year due to the pandemic, requiring an increase in fresh air ventilation to reduce the risk of infection and to keep our hospitals safe for staff and patients. As a result, our heating needs and total emissions saw a temporary increase. Despite this, our emission reduction efforts continued in the 2020-2021 fiscal year, with 33 mechanical and lighting retrofit projects completed that together will save Fraser Health an estimated 6.6 gigawatt hours (GWh) or 24,000 gigajoule (GJ) of energy, thereby reducing our carbon footprint by 1,200 tonnes of CO₂.

In addition, we continue to support staff engagement programs and the Green+Leaders program, which encourages a work culture of accountability for our impacts on climate change and environmental sustainability. Fraser Health programs and activities in waste management, environmentally preferable purchasing and planning for climate resilience and adaptation continue in this pandemic period.

Thank you to all our staff, medical staff and volunteers, as well as key external partners, for their hard work to reduce Fraser Health's environmental and carbon footprint. We know every individual can make a difference. By working together, we are able to provide both quality care and a greener health care environment for our patients and our community.

A handwritten signature in black ink, appearing to read 'Victoria Lee', written in a cursive style.

Dr. Victoria Lee

President and Chief Executive Officer
Fraser Health

Our CO₂ Footprint

2020 Greenhouse Gas Emissions Breakdown 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.

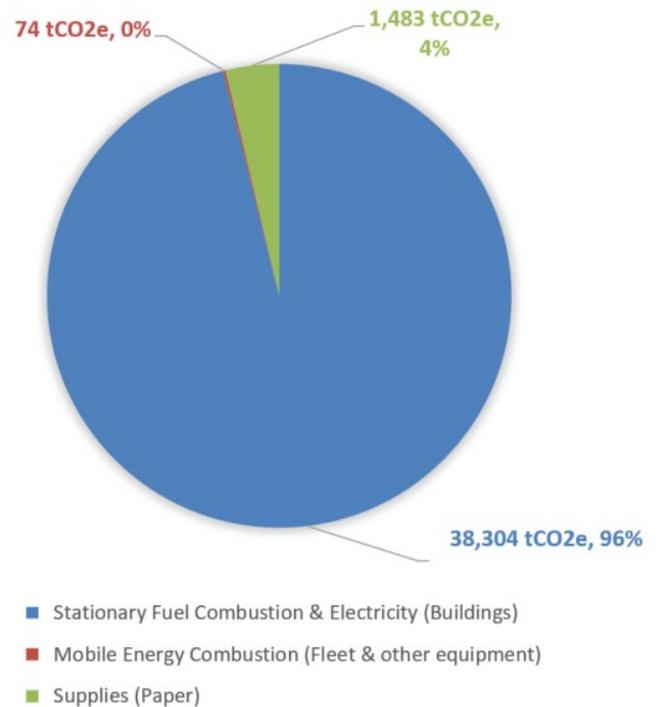
The Climate Action Secretariat uses various elements of reporting, based on the Greenhouse Gas Protocol Corporate Standard, which has classified carbon reporting into three scopes. Of these three scopes and various elements within each scope, the Climate Action Secretariat has determined Fraser Health's carbon footprint comprises six different greenhouse gases that are converted to tonnes of carbon dioxide equivalent (tCO₂e). 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 2020 offsets was 39,861 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 2020, Fraser Health purchased carbon offsets from the Ministry of Environment and Climate Change Strategy. Fraser Health's 2020 total offsets were 39,952 tCO₂e, including an adjustment for data corrections for 2018 and 2019, at a total cost of \$998,800

2020 FRASER HEALTH GREENHOUSE GAS (IN-SCOPE) EMISSIONS BY SOURCE



The table below shows the breakdown of emission and offset for 2020.

Fraser Health Authority 2020 GHG Emissions and Offsets	
GHG Emissions Created in Calendar Year 2020	
Total Emissions (tCO ₂ e)	39,876
Total BioCO ₂	15.0
Total Offsets (tCO ₂ e)	39,861
Adjustments to Offset Required GHG Emissions Reported in Prior Years (2018 and 2019)	
Total Offsets Adjustment (tCO ₂ e)	91
Grand Total Offsets for the 2020 Reporting Year	
Grand Total Offsets (tCO ₂ e) to be Retired for 2020 Reporting Year	39,952
Offset Investment (\$25 per tCO ₂ e)	\$998,800.00

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) emission is 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 Authority's Portfolio

Fraser Health's useable facility space has increased 35 per cent since the 2007 base reporting year, due largely to the construction of Abbotsford Regional Hospital and Cancer Centre in 2009, the Jim Pattison Outpatient Care and Surgery Centre in 2012 in Surrey, and Surrey Memorial Hospital's Critical Care Tower in 2014. In addition, the new construction of the Mental Health and Substance Use Wellness Centre on the Royal Columbian Hospital campus in New Westminster was completed in 2020.

Fraser Health Authority							
BUILDINGS, FTE AND WEATHER	2007	2015	2016	2017	2018	2019	2020
Distinct Fraser Health Buildings:	n/a	151	153	147	162	163	172
% Owned	n/a	82%	81%	83%	83%	82%	82%
% Leased	n/a	18%	19%	17%	17%	18%	18%
Usable Square Meters ¹	538,274	681,264	686,942	676,239	669,951	694,631	726,495
Full-Time Employee Equivalents ²	14,507	18,163	18,461	18,495	18,853	19,287	20,895
Weather (Heating Degree Days) ³	2,870	2,490	2,537	2,922	2,768	2,837	2,754

Notes for above table:

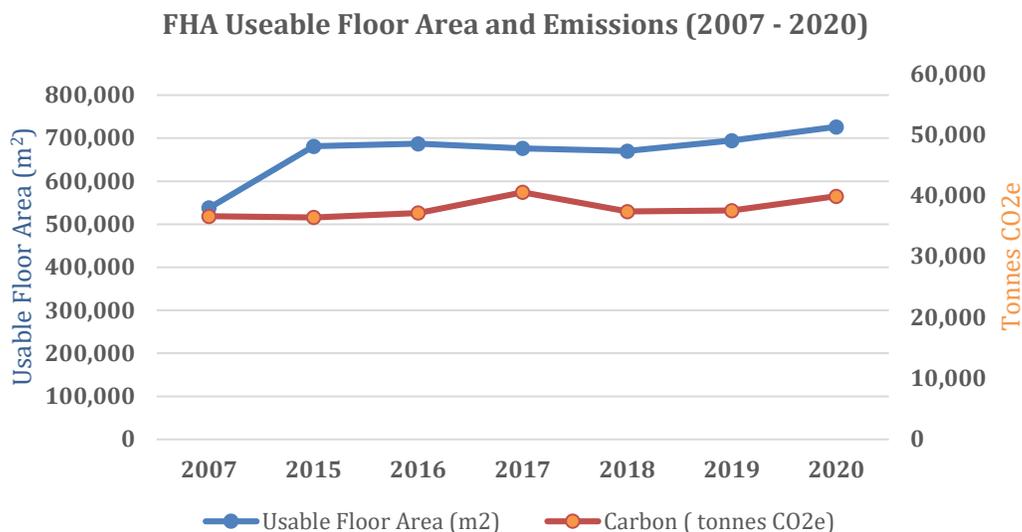
¹ Usable area excludes roof tops, interstitial spaces, and parking areas.

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.

Overall since 2007, Fraser Health's carbon footprint has increased, but at a much slower rate than floor area and staff increases. As of 2020, emissions per full-time equivalent (1.91 tCO₂e/FTE) have decreased by 24 percent since 2007, and emissions per unit of floor area (0.05 tCO₂e/m²) have decreased 19 percent 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. FHA's 2020 emissions per HDD (14.5 tCO₂e/HDD) are 14 per cent lower than the baseline year.



Fraser Health Authority

Our Carbon Footprint (in tCO ₂ e)		2007	2015	2016	2017	2018	2019	2020
tCO ₂ e	Mobile Fuel Combustion:	136	106	114	100	109	71	76
	Stationary Fuel Combustion and purchased Energy (electricity):	35,404	34,875	35,948	39,324	35,898	36,019	38,317
	Supplies (paper):	1,056	1,434	1,081	1,123	1,377	1,439	1,483
	Carbon Footprint¹	36,596	36,415	37,143	40,547	37,384	37,529	39,876
	Emissions not requiring Offsets²	-8	-19	-20	-22	-36	-39	-15
Carbon Offsets³	36,587	36,396	37,124	40,525	37,348	37,489	39,861	
KPIs	Emissions per Full-Time Employee (tCO ₂ e/FTE)	2.52	2.00	2.01	2.19	1.98	1.94	1.91
	Emissions per Facility Space (tCO ₂ e/m ²)	0.07	0.05	0.05	0.06	0.06	0.05	0.05
	Emissions per Heating Degree Day (tCO ₂ e/HDD)	12.75	14.62	14.63	13.87	13.49	13.21	14.47

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 was estimated that Fugitive Emissions from cooling equipment comprise 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.

³ Due to the COVID-19 pandemic, on March 31, 2020 a directive was issued to all ministries and public sector organizations in BC to use their 2018 GHG emissions as a temporary estimate for their actual 2019 GHG emissions, for the purpose of the 2019 Carbon Neutral Action Reports and 2019 Carbon Neutral Government reporting required under the Climate Change Accountability Act. Therefore, the purchased carbon offsets in 2019 was equivalent to 2018. A total offsets adjustment of 91 tCO₂e associated with the difference between the GHG emissions reported in 2019 and the actual 2019 GHG emissions is accounted for in 2020 Total Carbon Footprint for offsetting and 2020 purchased carbon offsets amount.

Actions Taken To Reduce Our CO₂ Footprint

Stationary Emissions (Buildings)

- Further reduced environmental impact by **initiating 33 retrofit projects** with a total estimated energy savings of 6.6 GWh (24,000 GJ) resulting in greenhouse gas savings of 1,200 tCO₂e.
- **Fully utilized the Carbon Neutral Capital Program** to fund the energy / greenhouse gas emission reduction project 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 2020-2021.
- **Waste Heat Recovery:** Ongoing process to introduce heat pumps to capture and re-use waste heat, or to convert low-temperature to high-temperature, useful heating applications with projects at Eagle Ridge Hospital, Heritage Village and Langley Memorial Hospital.
- **Invested \$455,000 from the Green Revolving Fund** in electricity energy saving study and projects.
- **Completed lighting energy efficiency projects** at Surrey Memorial Hospital, Felburn Care Center and Maple Ridge Treatment Center.
- **Completed Continuous Optimization refresh program** at Burnaby Hospital and Mission Hospital.
- **Embarked on the opportunities in Medical Device Reprocessing sterilizer heat recovery.** Following up on Fraser Health-initiated survey, new technology is being installed at Peace Arch Hospital Expansion, as well as Burnaby Hospital Redevelopment and new Surrey Hospital.
- **Continued to roll out the engagement strategy**

with Facilities Maintenance and Operation (FMO). The strategy focuses on energy performance, emission reduction, identifying conservation opportunities, and optimizing existing heating or cooling plants or equipment.

- **Continued to embed sustainability** by supporting staff engagement initiatives such as the Green+Leaders program and the GreenCare community website.
- **Engaged in new construction and major renovation projects** for Burnaby Hospital Redevelopment, Royal Columbian Hospital Redevelopment, new Surrey Hospital and 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.

Mobile Fleet and Other Vehicles Combustion

- Fraser Health now has **72 electric vehicle charging stalls** in visitor/employee parking.
- **Continued the free shuttle transport service for family members, ambulatory patients, and employees** between three facilities and the Surrey Central Skytrain Station, between Royal Columbian Hospital and Braid Station, and Burnaby Hospital and Gilmore/Patterson Stations. Ridership was 78,515 trips, a decrease of 50% over 2019.
- Fraser Health encourages active and clean modes of transportation and has 11 bike rooms/cages, 13 showers, and **508 bike parking stalls** across its 25 cores sites.
- **Transit Incentive Program (TIP)** Fraser Health provides employees with a 15 per cent monthly transit pass incentive, to encourage the use of transit

instead of single occupancy vehicles. In 2020, the average number of staff subscriptions was 333.

Supplies (Paper)

- **GreenCare Community** website continues to provide inspiration, tips and toolkits to reduce waste, including paper use.
- In 2020, Fraser Health co-developed a briefing note for PHSA Supply Chain on the benefit of **purchasing post-consumer recycled paper**. Fraser Health participated in the PHSA Supply Chain Request for Proposal for Paper and Stationary that included specifications for 30% and 100% PCR paper.

Actions that Fall Outside the Scope of the Carbon Neutral Government Regulation

The **BC 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 CleanBC plan. CleanBC plan was developed by the government in 2018 as a pathway to achieve the Province's legislated climate targets.
- Report climate risks and actions to reduce risks in Climate Change Accountability Report.
- Conduct net zero energy emission assessment 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).
- By 2022 conduct an integrated climate and health vulnerability assessment, and develop an integrated climate adaptation plan with a Health Canada grant.
- Develop an executive summary report series called "Moving Toward Climate Resilient Health Facilities" to introduce the topic of Fraser Health and future climate, understand the risks to patient care and facilities and discuss how to reduce risk.

Environmental sustainability actions taken by Fraser Health in 2020 included:

- PHSA Supply Chain updated their policy for **procurement of environmentally sustainable products and services**. Two changes in 2020: sitz bath packages no longer include tubing and gradient bag with savings of 287 kg of plastic. Perineal bottles have reduced plastic packaging.

- **Wastewater Pollution Prevention Plan reports** were submitted for nine Fraser Health sites as required by Metro Vancouver's Hospital Bylaw No. 319, highlighting actions underway to improve the quality of wastewater.
- **Education and awareness on GreenCare community website**, which provides tips and toolkits on environmental sustainability initiatives. 1,462 Fraser Health staff are registered on the site, which is currently under review for content refresh.
- **Continuing to support staff champions through the Green+Leaders program** through training, resources and recognition. The Green+Leaders recruited 14 new volunteers for Fraser Health in 2020 for a total of 85 active staff volunteers and 137 Fraser Health staff trained since the program began in 2007.
- **Fraser Health has active "green committees" or green teams**, led by Green+Leaders. With the support of the Exnovation Grant from the Innovation, Planning and Transformation Department, a Fraser Health Green+Leader was awarded \$1,000 to address environmental waste at the bedside.
- **Fraser Health facilities comply with a standardized recycling program**, 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. Each facility has a target of 50 per cent waste diversion by 2030.
- In 2020, 1,771 FHA staff took the **Waste Management Basics Learning Module**, up from 721 in 2019. Two in-person **Waste Reduction Workshops** were held at Jim Pattison Outpatient Care and Surgery Centre.

Future Actions to Reduce Our CO₂ Footprint

Fraser Health plans to continue reducing its CO₂ footprint with a focus on in-scope emission and strategic planning.

In-scope Emissions

The majority of Fraser Health's carbon footprint is related to stationary fuel combustion in 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 are to 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 standard such as Leadership in Energy and Environmental Design (LEED) with new construction and expansion project team.
- **Setting up long-term plan** 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.
- **Continuing to lead Net Zero Emissions and Energy Feasibility discussion** with the new construction project offices of Burnaby Hospital Redevelopment, Royal Columbian Hospital Redevelopment, new Surrey Hospital, several new long-term care facilities and increase collaboration in all project phases.
- **Building partnerships with cities and municipalities** to investigate district energy system opportunities that enable alternative energy solutions for existing buildings or new constructions.
- **Planning and implementing greenhouse gas or energy reduction projects** in our existing buildings portfolio by using the Carbon Neutral Capital Program and supplementing with internal capital funds and incentives from BC Hydro and FortisBC.
- **Continuing 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 employees and external consultants to identify greenhouse gas/energy reduction opportunities.
- **Collaborate with building operators and engineers** to identify greenhouse gas reduction opportunities and tracking building performance.
- Continue to **engage and educate Fraser Health employees**, through the Green+Leaders program and GreenCare website.

Mobile Combustion (Fleet and Other Vehicles)

- With other health organization, conduct an electric vehicle baseline and feasibility study which will include fleet vehicles. This study will include 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 **create 30 per cent PCR paper as a default option**, and increase proportion of PCR paper available for ordering.

Feature Story: Fraser Health learns from energy and emission impact due to pandemic response

Despite Fraser Health's continuing effort to reduce carbon emissions, Fraser Health increased its carbon emissions by 2,372 tonnes CO₂e in 2020, or 6.3 per cent compared to 2019. We did not have a cold winter, so what was the cause of this increase?

In large part, it was caused by the pandemic and a safety-related decision to increase the amount of outside air in ventilation systems. Early in the pandemic, Fraser Health leadership asked hospitals and long-term care facilities, to go to 100 per cent outside air, that is, open intakes for ventilation fans to 100 per cent and close off the recirculation of air.

In normal times, Fraser Health indoor environments are carefully controlled to mitigate against transmission of pathogens. Each area of the hospital, from waiting areas to operating theatres, must meet specific Canadian Standards Association code requirements for the amount of air circulation and the proportion of outside fresh air.

The initial request was made in March 2020 out of an abundance of caution to lower the risk of indoor transmission of the COVID-19 virus. Guidance from the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) later confirmed this approach, in response to available research on COVID-19 transmission (see Note 1). However, ASHRAE cautioned that maintaining an appropriate thermal and humidity range for patient health is also important to prevent viral transmission.

For Fraser Health, it was a learning process as to equipment limitations and trade-offs. All sites have different designs and age of equipment, and some older hospitals are not able to provide 100 per cent outside air during the hottest and coldest periods of the year, while also maintaining indoor thermal comfort.

The impact of moving to 100 per cent outside air increased Fraser Health's energy costs by approximately \$550,000 and carbon emissions by 8 per cent. (Actual emissions increased 6.3 per cent, which takes into account a milder winter, increasing efficiencies and an overall increase in Fraser Health occupied spaces.)

Isolation Room Ventilation Key to COVID-19 Safety

Ventilation control is only one part of a much larger effort to contain COVID-19 transmission within Fraser Health facilities, but is especially key to the creation of isolation rooms for infectious patients. Each isolation room requires increased ventilation and a degree of de-pressurization to direct a flow of air across the patient towards the exhaust. This directional airflow is more important than increasing the air change rate, as a strategy to reduce virus transmission, according to ASHRAE.

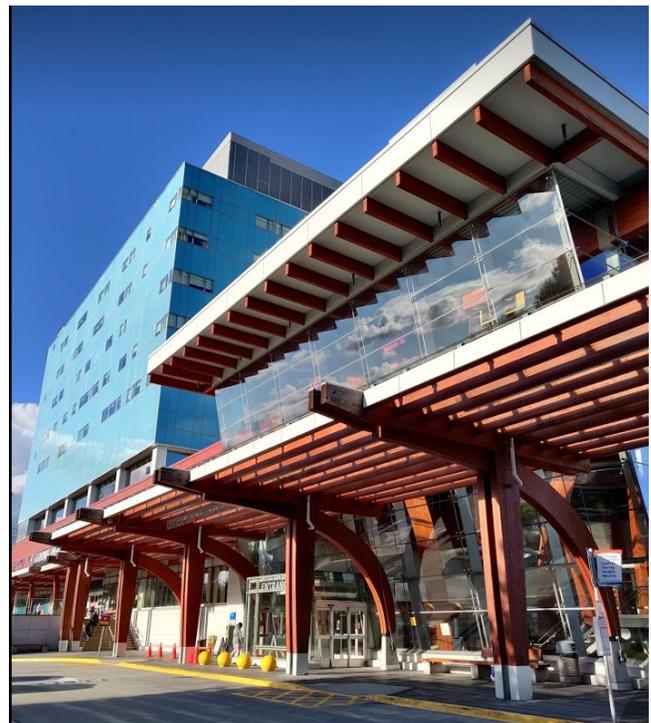


Photo: Surrey Memorial Hospital's Critical Care Tower

Surrey Memorial Hospital's Critical Care Tower (CCT), which opened in 2014, was designed to respond to a pandemic. The tower has 138 patient rooms grouped into 16 pods, with the ability to double-up some rooms for extra capacity. These can also be easily converted to isolation pods with a few changes to the ventilation controls. All pods have been in isolation mode during the pandemic's third wave (spring of 2021), with four pods being in isolation mode since the second wave in the fall of 2020..

The CCT has a very busy Emergency Department that often reaches levels of 500 patients per day. Despite providing care for approximately 75 per cent of COVID-19 patients within the Fraser Health Authority, the level of COVID-19 transmission among staff or patients at the Critical Care Tower was minimal and considered a great achievement.

Future priorities for HVAC design

If the call for 100 per cent outdoor air continues, methods of avoiding an increase in carbon emissions due to the thermal heating load should be considered. Fraser Health energy retrofit projects, such as an active heat recovery, are currently underway at Heritage Village long-term care facility and can be designed with energy efficiency in mind, but still using 100 per cent fresh air.

New construction, hospital expansion projects and major renovations of ageing equipment provide critical opportunities to introduce newer technologies and improved design for efficiency and resiliency. This direction is reflected in the *Carbon Neutral and Climate Resilient Health Care Facilities*, part of the government's new *Health Capital Policy Manual* released in March 2021.

Fraser Health's capital planning and environmental sustainability teams are revising design guidelines for future hospitals that will help meet B.C.'s aggressive targets for carbon reduction, increase resiliency to climate-related stress and future pandemics, while maintaining services to meet the population's health care needs.

Note ¹: [ASHREA.org/technical-resources/healthcare](https://www.ashrea.org/technical-resources/healthcare)