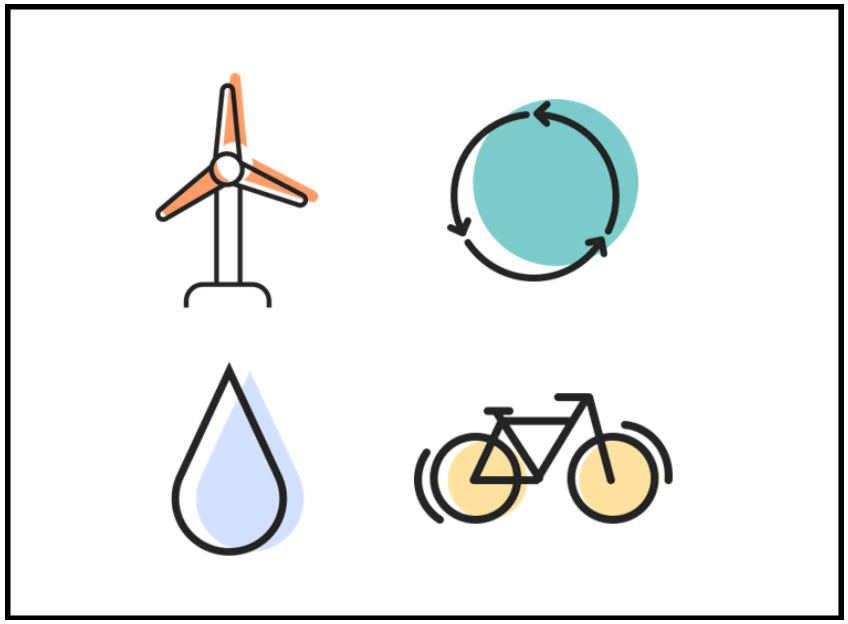
Methodology and Context for Calculating Key Performance Indicators
Fraser Health, Providence Health Care, Provincial Health Services Authority, Vancouver Coastal Health



Author: Energy and Environmental Sustainability

This is a 'living' document. The most up-to-date version can be found at
https://bcgreencare.ca/resource/energy-and-environmental-sustainability-ees-methodology-and-context-for-calculating-key-performance-indicators/

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Introduction

This document outlines the methodology used to calculate key performance indicators (KPIs) as they relate to health organization sustainability goals and provide context for results. It is meant to be used in conjunction with graphs displayed on the GreenCare website and in performance reports.

For each focus area, you will find the following information:

- *Focus area goals*
- *KPI(s)*
- *Metric*
- *How metric is calculated and explanation of any terms*
- *Scope of metric*
- *Needed background information*
- *Explanation of any data anomalies*

In addition, a list of sites that are included in KPI calculations are included at the end.

If you have any questions about the information below, please contact: info@bcgreencare.ca

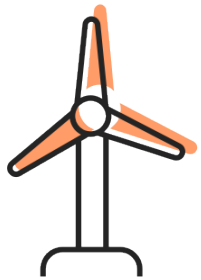
Focus Area Goals

Energy & Carbon: Reduce our carbon footprint by increasing energy efficiency and reducing reliance on fossil fuels.

Materials: Choose materials and products that contribute to human and environmental health, while avoiding waste and unnecessary chemicals.

Transportation: Increase access to and use of transportation modes that reduce negative environmental impacts and benefit human health and wellness.

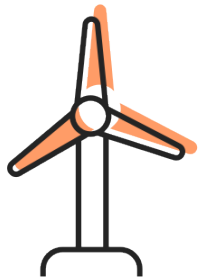
Water: Minimize water consumption to reduce demand on natural resources and impact on our living environments.



Carbon

KPI 1 of 3	Decrease total GHG emissions from owned and leased buildings, fleet and paper from 2007 baseline.
Metric	Tonnes of carbon dioxide equivalent per year (tCO2e/year).
Calculation	Annual GHG emissions are calculated from the Clean Government Reporting Tool (CGRT) with emission factors taken from B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions.
Data source	The following data is entered into the CGRT: • Utility provider data • Paper Use (supplied from PHSA Procurement) • Fuel Oil use from fleet vehicles (supplied by PHSA Procurement)
Explanation of terms / Scope	tCO2e is a standard unit for counting greenhouse gas (GHG) emissions. BC Government legislation mandates public sector organizations to report on their emissions associated with building energy, paper use and fleet vehicles. It doesn't include other health care emissions sources.
Background info	This target and baseline is mandated by the Climate Change Accountability Act. The *Climate Change Accountability Act* (CCAA) has set ambitious emissions reduction targets for public sector organizations: • 40% by 2030 (from 2007 baseline) • 60% by 2040 (from 2007 baseline) • 80% by 2050 (from 2007 baseline)
Data anomalies and trends	Estimated calculations are used in the CGRT for facility space without utility metered data. Paper use is determined by paper purchased not necessarily used. Approximately 96-98% of the total GHG emissions come from building energy use. Portfolio growth has a significant impact on building GHG emissions.

Carbon



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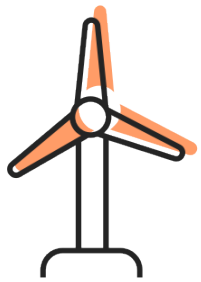
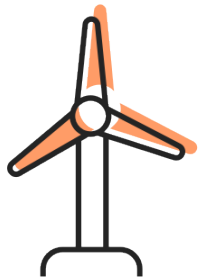
KPI 2 of 3	Decrease total GHG emissions from owned and leased buildings from 2010 levels.
Metric	Tonnes of carbon dioxide equivalent per year (tCO2e/year).
Calculation	Annual building GHG emissions are calculated from the Clean Government Reporting Tool (CGRT) with emission factors taken from B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions.
Data source	Utility provider data entered into the CGRT.
Explanation of terms / Scope	tCO2e is a standard unit for counting greenhouse gas (GHG) emissions. Building energy use is one of the current in-scope emissions sources and consists of scope 1 (direct i.e. natural gas use) and scope 2 (indirect i.e electricity use) emissions.
Background info	Target determined by the CleanBC plan (part of the BC climate change legislation). CleanBC plan is the pathway to achieving a 50% reduction in emissions for public sector buildings by 2030.
Data anomalies and trends	Estimated calculations are used in the CGRT for facility space without utility metered data. Approximately 96-98% of the total in-scope GHG emissions come from building energy use. Portfolio growth has a significant impact on building GHG emissions.

Carbon

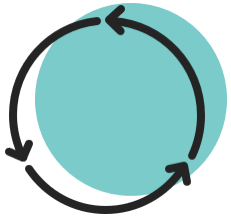


KPI 3 of 3	Decrease the amount of GHG emissions generated per floor area of owned and leased buildings from 2010 levels.
Metric	Kilograms of carbon dioxide equivalent per square metre of facility per year (kgCO2e/m2/year).
Calculation	Annual building GHG emissions are calculated from the Clean Government Reporting Tool (CGRT) with emission factors taken from B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions. For intensity the annual GHG emissions is divided by the square metre of usable facility space for all owned and leased buildings.
Data source	Utility provider data entered into the CGRT. Useable facility space (square meters) comes from the ARCHIBUS (an internal health authority resource for space analytics).
Explanation of terms / Scope	This KPI is also known as GHG emissions intensity for buildings. tCO2e is a standard unit for counting greenhouse gas (GHG) emissions. Building energy use is one of the current in-scope emissions sources and consists of scope 1 (direct i.e. natural gas use) and scope 2 (indirect i.e. electricity use) emissions. This represents the emission intensity average across all owned and leased sites (as defined by the *Climate Change Accountability Act*).
Background info	Target is aligned with the CleanBC plan (part of the BC climate change legislation). CleanBC plan is the pathway to achieving a 50% reduction in emissions for public sector buildings by 2030.
Data anomalies and trends	Estimated calculations are used in the CGRT for facility space without utility metered data. Approximately 98% of the total GHG emissions in this portfolio come from building energy use. Building new low carbon emission facilities will support the trend to meet GHG emissions intensity target.

Energy



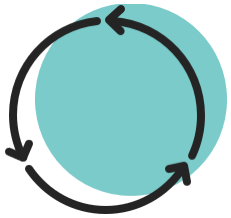
KPI	Decrease energy use intensity: the amount of energy used per floor area of owned buildings from 2007 levels.
Metric	Equivalent kilowatt hours consumed per square metre of facility space per year (ekWh/m^2 /year).
Calculation	Energy use at owned health-care sites is measured in equivalent kilo-watt hours (ekWh) or giga-watt hours (eGWh) and captures the entire amount of energy used from all energy sources on an annual basis. This is then divided by total building floor area minus underground parking, interstitial space and mechanical penthouses.
Data source	Invoices from utility providers and vendors, which are loaded into a utility database management tool (Asset Planner). Square meters come from ARCHIBUS (an internal health authority resource for space analytics).
Explanation of terms / Scope	This KPI is also known as energy use intensity. Owned sites are defined as primarily owned health-care facilities that are actively monitored for energy, water and waste data. In some cases, a few operated but not owned sites are included in energy monitoring. Utilities includes electricity, natural gas and fuel oil, and energy purchased from district energy systems. ekWh is a unit of energy consumption that is used to convert the volume of an energy source into equivalent energy units.
Background info	2007 baseline selected to align with Climate Change Accountability Act. Targets determined by identifying energy reduction opportunities and taking into account changes in building portfolio.
Data anomalies and trends	In 2022, a switch to a new utilities database management tool (Asset Planner) required a different billing period resulting in minor discrepancies with data reported in previous years. Changes in energy use and intensity are affected by new construction activity and weather temperatures.



Materials

KPI 1 of 2	Increase waste recycled or composted at acute and non-acute care owned sites.
Metric	Percent of waste recycled or composted (% recycled, annual average).
Calculation	The percent of waste recycled or composted is calculated by dividing total estimated weights for recycling (including paper, containers and organics) by the total estimated weight of all waste (including general garbage, organics and recyclables).
Data source	Waste hauling invoices
Explanation of terms / Scope	This KPI is also known as waste diversion. Data does not include segregated bio-medical or pharmaceutical waste. Health organizations endeavour to capture data for recycled lighting, batteries, scrap metal, wood printer cartridges and other where services are available. Recycling rates are for all owned and operated facilities. Waste management at leased sites is under the purview of the property management company, and not the health organization.
Background info	Targets are created internally and are based on health care best practice (see Benchmarking report by Practice GreenHealth), past trends and current resourcing (ie. dedicated staff and funding). Currently no mandated or voluntary targets at municipal, provincial, regional, national or international levels exist. Benchmarking report by Practice Greenhealth. 2022.Benchmark.Tables.Final__0.pdf (practicegreenhealth.org)
Data anomalies and trends	Acute care waste-diversion rates show some variation over time, however the top performing sites plateau at approximately 40%. In order to reach the 2030 target of 40% waste diversion at all sites, more aggressive action needs to be taken to reduce garbage waste and look for new streams of recycling. • Diversion rates reported for 2023 reflect the site level diversion of waste only. Some acute sites are still not back to full recycling services. We are working closely with our waste vendors to get them back to full recycling services and gather robust transparent data. • Non-acute care waste-diversion rate dropped during the Covid-19 pandemic but has recovered well

	in 2022. • Recycling in acute care clinical spaces was paused for periods of the Covid-19 pandemic, and has slowly been returning to clinical departments since 2021.



Materials

KPI 2 0f 2	Decrease waste generated per floor area at acute and non-acute care owned sites.
Metric	Total kilograms of waste generated per square metre of usable facility area (kilograms/m^2/year).
Calculation	The waste-intensity rate is calculated by dividing total waste generated (including general garbage, paper, mixed containers, and organics waste streams) by the total usable floor area, excluding parkades and stairwells.
Data source	Waste hauling invoices ARCHIBUS - facility space in square metres
Explanation of terms / Scope	This KPI is also known as waste intensity. The goal is to reduce total waste volume generated per square meter per year. Waste data does not include segregated bio-medical waste. Includes all owned and operated facilities. Waste management at leased sites is under the purview of the property management company, and not the health organization.
Background info	Targets are created internally and are based on health care best practice (see Benchmarking report by Practice GreenHealth), past trends and current resourcing (ie. dedicated staff and funding). Currently no mandated or voluntary targets at municipal, provincial, regional, national or international levels exist. Waste-intensity rates were first created in 2018, and were calculated using historical data back to 2014, however, it is not used as a baseline year in this KPI.

Transportation

KPI 1 of 2	Increase the proportion of self-reported commutes staff make by cycling, walking and rolling (wheelchair, seated electric scooter)
Metric	% commutes, annual average
Calculation	Percentage is calculated for each transportation mode, which is the average of all self -reported commuting percentages across the health organization for the calendar year of reporting.
Data source	Annual GreenCare Survey, self-reported annual average
Explanation of terms / Scope	This KPI is also known as active transportation Mode share (percentage of commutes) is a way to understand how staff are moving to and from home and work, by showing the proportion of transportation by different options/modes over a reporting year. This data is self-reported by voluntary survey participants, and does not account for distance travelled.
Background info	This is a health authority developed target that is based on past trends and current resourcing (ie. dedicated staff and funding). Data is collected annually since 2020. Prior to 2020 transportation data was collected every 2 years.

Transportation

KPI 2 of 2	Increase the proportion of self-reported commutes staff make by hybrid and electric vehicles, public transit, carshare, carpool and hospital shuttle
Metric	% commutes, annual average
Calculation	Percentage is calculated for each transportation mode, which is the average of all self -reported commuting percentages across the health organization for the calendar year of reporting.
Data source	Annual GreenCare Survey, self-reported annual average
Explanation of terms / Scope	This KPI is also known as clean transportation. Mode share (percentage of commutes) is a way to understand how staff are moving to and from home and work, by showing the proportion of transportation by different options/modes over a reporting year. This data is self-reported by voluntary survey participants, and does not account for distance travelled.
Background info	This is a health authority developed target that is based on past trends and current resourcing (ie. dedicated staff and funding). Data is collected annually since 2020. Prior to 2020 transportation data was collected every 2 years.

Water

KPI	Decrease the amount of water used per floor area in owned buildings from 2010 levels.
Metric	Cubic water use per square metre of facility space per year (m^3/m^2/year).
Calculation	Water use at owned sites is measured in cubic metres from water meters (where applicable) per year divided by the total building floor area minus underground parking, interstitial space and mechanical penthouses.
Data source	Utility invoices from various cities and municipalities, which are loaded into a utility database management tool (Asset Planner). Square meters come from ARCHIBUS (an internal health authority resource for space analytics).
Explanation of terms / Scope	This KPI is also known as water use intensity. Owned sites are defined as primarily owned health-care facilities that can be actively monitored for energy, water and waste data. In some cases, a few operated but not owned sites are included in water monitoring.
Background info	2010 baseline selected to align with commencement of recorded water meter data. This is a health authority developed target that is based on past trends, current resourcing (ie. dedicated staff and funding) and potential opportunities.
Data anomalies and trends	In 2022, a switch to a new utilities database management tool (Asset Planner) required a different billing period resulting in minor discrepancies with data reported in previous years.

Owned and Operated Site List

	Health Care Site Name	Type of Facility	Useable Facility Area (m2)
FH	Abbotsford Regional Hospital and Cancer Centre	Acute	62,258
FH	Burnaby Hospital	Acute	48,089
FH	Chilliwack General Hospital	Acute	30,853
FH	Chilliwack Health Centre	Treatment centre	2,976
FH	Creekside Withdrawal Management Centre *	Long-term care	2,729
FH	Czorny Alzheimer Centre *	Long-term care	6,393
FH	Delta Hospital	Acute	14,322
FH	Eagle Ridge Hospital	Acute	24,392
FH	Fellburn Care Centre	Long-term care	4,045

FH	Fraser Canyon Hospital	Acute	7,677
FH	Heritage Village	Long-term care	5,776
FH	Jim Pattison Outpatient Care	Acute	19,941
FH	Langley Memorial Hospital	Acute	42,944
FH	Maple Ridge Treatment Centre	Long-term care	2,323
FH	Mission Memorial Hospital	Acute	22,064
FH	MSA Cottage & Worthington Pavilions	Long-term care	4,958
FH	Parkholm Place	Long-term care	3,582
FH	Peace Arch Hospital	Acute/ Long-term care	49,791
FH	PAH Foundation Lodge *	Long-term care	9,613

FH	Queens Park Care Centre	Acute	16,074
FH	Ridge Meadows Hospital	Acute	23,238
FH	Royal Columbian Hospital	Acute	74,248
FH	Surrey Memorial Hospital	Acute	115,112
FH	Timber Creek	Acute	4,539
PHC	Holy Family Hospital	Long-term care	11,230
PHC	Mount Saint Joseph Hospital	Acute	21,245
PHC	St. Paul's Hospital	Acute	102,775
PHC	St. Vincent's: Brock Fahrni	Long-term care	5,860
PHC	St. Vincent's: Honoria Conway - Heather	Assisted Living	5,388
PHC	St. Vincent's: Langara	Long-term care	9,465
PHC	Youville	Long-term care	7,190

PHSA	BC Cancer – Prince George	Treatment centre	4,645
PHSA	BC Cancer – Surrey	Treatment centre	6,700
PHSA	BC Cancer – Victoria	Treatment centre	11,864
PHSA	BC Cancer – Vancouver	Treatment centre	29,335
PHSA	BC Cancer Research Centre	Research	21,368
PHSA	BC Children's Hospital & BC Women's Hospital	Acute	209,796
PHSA	Forensic Psychiatric Hospital	Long-term care	19,300
PHSA	Red Fish Healing Centre	Treatment centre	20,752
VCH	Bowling Green	Child Care	496
VCH	Cedarview Lodge	Long-term care	6,989
VCH	Dogwood Lodge	Long-term care	4,943

VCH	George Pearson Centre *	Long-term care	17,655
VCH	GF Strong	Acute	19,159
VCH	Gordon and Leslie Diamond Centre	Acute	33,851
VCH	Kiwanis Care Centre	Long-term care	11,717
VCH	Lions Gate Hospital / Evergreen / HOpe Centre	Acute/ Long-term care	64,540
VCH	Margaret Fulton	Long-term care	2,442
VCH	Minoru Residence	Long-term care	11,584
VCH	qathet General Hospital / Willingdon Creek Village	Acute/ Long-term care	21,417
VCH	Richmond Hospital	Acute	33,223
VCH	Richmond Lions Manor	Long-term care	4,604

VCH	Sechelt Hospital / Totem Lodge	Acute/ Long-term care	13,779
VCH	Shorncliffe Intermediate Care	Long-term care	3,062
VCH	Squamish Hospital / Hilltop House	Acute/ Long-term care	10,697
VCH	UBC Djavad Mowafaghian Centre for Brain Health *	Research/Outpatient	15,772
VCH	UBC Hospital *	Acute/ Long-term care	68,701
VCH	Vancouver General Hospital	Acute/ Long-term care	259,315
VCH	Whistler Health Care Centre	Acute	2,755
Totals:	**59**	*sq meters*	**1,718,189**

*Leased facility that is included in energy and water KPI data