



Environmental sustainability is everyone's story.



**Provincial Health
Services Authority**
Province-wide solutions.
Better health.



Table of Contents

1.0 Executive Summary

2.0 Our Story

- 2.1 Provincial Health Services Authority: “Healthy lives in healthy communities.”
- 2.2 Sustainability successes
- 2.3 A real need for action
- 2.4 Our new climate reality
- 2.5 Future of Health Care survey

3.0 This Is Who We Are.

- 3.1 Senior executive team
- 3.2 The GreenCare team
- 3.3 Frontline health care professionals

4.0 We're Finding Solutions: Together.

- 4.1 Our GreenCare initiative
- 4.2 These are our GreenCare Focus Areas.
- 4.3 This is what we've done: the 2018 Dashboard.
- 4.4 There's still a lot that we need to do.

5.0 Writing the Story We Want, Now and in the Future

- 5.1 Future actions
- 5.2 Everyone's story looks a little different.

Our Focus Areas



**Smart Energy
& Water**



**Zero Waste
& Toxicity**



**Active & Clean
Transportation**



**Workplace
Leadership**



**Regenerative
Design**

1.0 Executive Summary

Environmental sustainability
is everyone's story.

Table of Contents

Executive Summary

Our Story

This Is Who We Are.

**We're Finding
Solutions: Together.**

**Writing the Story We Want,
Now and in the Future**

Downloads

**Provincial Health Services
Authority CNAR ↓**

**Provincial Health Services
Authority Dashboard ↓**

**Lower Mainland Health
Authorities Dashboard ↓**

Welcome to the seventh annual Environmental Performance Accountability Report (EPAR). This report represents an opportunity to acknowledge the hard work, leadership, and willingness of everyone at Provincial Health Services Authority (PHSA) to support sustainability. It also speaks to the staff's dedication to providing the best health care to the communities that we serve. We can all be proud of and inspired by these values.

The willingness of PHSA staff to support and advance GreenCare initiatives and strategies is also a testament to the fact that environmental sustainability is everyone's story. In order to address the challenges of the new climate reality at PHSA, in each of the Lower Mainland health care organizations, and in the broader world, we must work together. From emergency rooms to lunch rooms, each of us can take a leading role in transforming health care through our everyday decision making.

Accordingly, this year's EPAR acknowledges the importance of decision making at PHSA via three key objectives: Awareness & Accountability, Desire & Decision Making, and Reinforcement & Recognition.

In being aware and accountable, we can be leaders in ensuring environmental stewardship by being responsible to our key target audiences and accountable for our choices and actions.

We can also be leaders by promoting the desire to achieve greater environmental stewardship within health care, and making decisions that ensure that this desire drives positive outcomes.

Finally, we can support sustainable change by reinforcing and recognizing projects and people that are leading by example.

These objectives are not abstracts. We've seen real success in this strategy as PHSA has, through energy conservation work, avoided over \$1 million in energy costs since 2010. With PHSA spending \$4.8 million on energy costs and \$850 thousand on water costs each year, implementing effective strategies to reduce utility costs has significant environmental and fiscal benefits, ultimately contributing to better patient care. This is but one example of sustainability in action.

In this report, you will find successes and challenges, work completed and work yet to be done, good news stories and pressing concerns, and targets met and targets to achieve. But most of all, the report shows that because our decisions make a real difference to our workplace and communities, each of us has an important role to play in the story that is environmental sustainability.



Mauricio A. Acosta
Executive Director,
Business Performance
& Corporate Support

Table of Contents

Executive Summary

Our Story

- Provincial Health Services Authority: “Better health. Best in health care.”
- Sustainability successes
- A real need for action
- Our new climate reality
- Future of Health Care survey

This Is Who We Are.

**We’re Finding
Solutions: Together.**

**Writing the Story We Want,
Now and in the Future**

Downloads

**Provincial Health Services
Authority CNAR ↕**

**Provincial Health Services
Authority Dashboard ↕**

**Lower Mainland Health
Authorities Dashboard ↕**

2.0 Our Story

Table of Contents

Executive Summary

Our Story

- Provincial Health Services Authority: “Better health. Best in health care.”
- Sustainability successes
- A real need for action
- Our new climate reality
- Future of Health Care survey

This Is Who We Are.

We’re Finding Solutions: Together.

Writing the Story We Want, Now and in the Future

Downloads

Provincial Health Services Authority CNAR ↓

Provincial Health Services Authority Dashboard ↓

Lower Mainland Health Authorities Dashboard ↓

2.1 PHSA: “Healthy lives in healthy communities.”

Provincial Health Services Authority (PHSA) is the only health authority with a province-wide mandate for providing B.C. residents with a coordinated provincial network of specialized health care services.

Established in 2001, PHSA operates the following specialized centres/services: BC Cancer, BC Centre for Disease Control, BC Children’s Hospital and Sunny Hill Health Centre for Children, BC Emergency Health Services, BC Mental Health & Substance Use Services, and BC Women’s Hospital + Health Centre. It also manages provincial health care programs and services that provide direct health care services through program collaboration with regional health authorities.

By planning, coordinating, and evaluating specialized health services in partnership with health authorities across B.C., PHSA encourages equitable, high-quality, and cost-effective health care for all British Columbians.

As an academic health organization, PHSA has nearly 700 researchers, supported by hundreds of staff, that attract more than \$140 million in external research funding every year. This makes PHSA one of the largest academic health science organizations in Canada. Research studies take place in a variety of PHSA locations, including laboratories,

patient care settings, and the community. PHSA translates this new knowledge into improved approaches to patient care, disease prevention, and health system efficiency. In addition, through academic partnerships, PHSA helps develop the research talent of the future, providing on-the-job learning opportunities for more than 1,250 research trainees.

[View Provincial Health Services Authority’s 2018 Carbon Neutral Action Report \(CNAR\)](#)

Key Stats

422,796_{m²}

Usable facility space^A

74

Distinct buildings

14,383

Full-time equivalent staff^B

A. As reported in the annual PHSA Carbon Neutral Action Report. Usable facility space is determined and aligned with a formula used in reporting in the annual Climate Action Secretariat’s mandated Carbon Neutral Action Reports.

B. FTE data point is aligned with what is reported in the Carbon Neutral Action Reports and includes all designated groups reported in Health Sector Compensation Information System: Physicians (doctors on staff), Executive/Excluded, Non-Union, and Bargaining Unit Employees (Community, Facilities, Health Science Professionals, Nurses, and Residents).



- Provincial Health Services Authority: “Better health. Best in health care.”
- Sustainability successes
- A real need for action
- Our new climate reality
- Future of Health Care survey

2.2 Sustainability successes

Overview of PHSA’s Environmental Sustainability Milestones and Awards

PHSA has achieved significant success in its energy and environmental sustainability work across the various regions and health

care sites, as highlighted by the following key environmental sustainability milestones and awards:

2018

- BC Hydro Power Smart Healthcare Sector Leader
- HUB’s Bike to Work Award, Best in Health Care

2015

- Canada’s Top 100 Employers — Greenest Employer Award
- Launch of the Green Revolving Fund

2013

- BC Hydro Outstanding Service Award, Green+Leaders
- Canada’s Top 100 Employers — Greenest Employer Award
- GreenCare Community website launched

2009

- Green+Leaders created
- BC Hydro Power Smart Executive Leader Award

2017

- Canada’s Top 100 Employers — Greenest Employer Award
- HUB’s Bike to Work Award, Best in Health Care

2014

- HUB Cycling Coalition Award — Best in Health category

2012

- Canada’s Top 100 Employers — Greenest Employer Award

2008

- BC Hydro Power Smart Energy Manager of the Year Award

2016

- Canada’s Top 100 Employers — Greenest Employer Award
- 100% implementation of the Recycling Renewal program across all acute and long-term care health care sites
- Green and Healthy Hospitals’ Climate Champions Award (Gold for GHG reduction)
- HUB’s Bike to Work Award, Best in Health Care
- Launch of the [Climate Resilience & Adaptation Program](#)

2011

- Sustainability Policy adopted
- Recycling Renewal program launched

Table of Contents

Executive Summary

Our Story

- Provincial Health Services Authority: “Better health. Best in health care.”
- Sustainability successes
- A real need for action
- Our new climate reality
- Future of Health Care survey

This Is Who We Are.

We're Finding Solutions: Together.

Writing the Story We Want, Now and in the Future

Downloads

Provincial Health Services Authority CNAR ↓

Provincial Health Services Authority Dashboard ↓

Lower Mainland Health Authorities Dashboard ↓

Building for Energy and Environmental Sustainability

In the construction and renovation of facilities, PHSA prioritizes supporting the highest level of human and environmental health and wellbeing. Often, this means new construction projects strive for certification in Leadership in Energy and Environmental Design (LEED), administered by the Canadian Green Building Council.



LEED Projects - Lower Mainland Facilities Consolidation

Registration Date	Certification Date	Project Name	Certification Level	Project City	Project Size m²
2004-12-23	2005-07-22	BC Cancer Research Centre	Gold	Vancouver	21,677
2005-03-15	2011-11-03	Child, Adolescent and Women's Mental Health Building	Silver	Vancouver	6,280
2009-05-12	2014-06-19	British Columbia Cancer Agency Centre for the North	Gold	Prince George	5,035
2011-03-26	2013-06-20	BC Children's & BC Women's Redevelopment Project Clinical Support Building	Gold	Vancouver	2,319
2012-07-10	2015-03-17	BC Children's and Women's Health Centre Child Care Center	Gold	Vancouver	684
2014-01-02	2018-09-18	Children's and Women's Redevelopment Project - Teck Acute Care Centre	Gold	Vancouver	57,101

Table of Contents

Executive Summary

Our Story

- Provincial Health Services Authority: “Better health. Best in health care.”
- Sustainability successes
- A real need for action
- Our new climate reality
- Future of Health Care survey

This Is Who We Are.

We’re Finding Solutions: Together.

Writing the Story We Want, Now and in the Future

Downloads

Provincial Health Services Authority CNAR ↓

Provincial Health Services Authority Dashboard ↓

Lower Mainland Health Authorities Dashboard ↓

2.3 A real need for action

Our region is undergoing environmental changes that present challenges to PHSA. As we continue to work toward a healthier future, there are several key areas for action.

Transportation

Every day, health care staff provide life saving care to the population of British Columbia, but the vast majority of these staff drive to work in single occupancy (fuel-based) vehicles.

Health care organizations have an environmental responsibility to reduce the resulting air pollution and an opportunity to improve the active health of their staff.

“A 2008 study by the Canadian Medical Association estimated that almost 3,000 Canadians die annually from short-term exposure to air pollution, while another 18,000 die annually due to long-term effects of polluted air.”^C



Energy & Water

Health care sites and operations often run 24/7 and require large amounts of energy and water to maintain the highest level of care to a growing population across the Lower Mainland of British Columbia.

Health care organizations have an environmental and fiscal responsibility to reduce energy and water use and the resulting carbon footprint.

“Canadians are the world’s second largest per capita users of water.”^D



C. https://www.healthyenvironmentforkids.ca/sites/healthyenvironmentforkids.ca/files/NoBreathing_Room.pdf

D. <http://publications.gc.ca/Collection-R/LoPBdP/BP/bp333-e.htm>

Table of Contents

Executive Summary

Our Story

- Provincial Health Services Authority: “Better health. Best in health care.”
- Sustainability successes
- A real need for action
- Our new climate reality
- Future of Health Care survey

This Is Who We Are.

We’re Finding Solutions: Together.

Writing the Story We Want, Now and in the Future

Downloads

Provincial Health Services Authority CNAR ↓

Provincial Health Services Authority Dashboard ↓

Lower Mainland Health Authorities Dashboard ↓

Material Waste

Quality patient care requires a vast amount of supplies, which results in large amounts of material waste. The decline in global recycling markets, the differences in regionally accepted materials, and the real and perceived contamination risks in the recycling streams accepted by local vendors has limited ability to reduce the material waste sent to landfills or incineration.

Health care organizations have an environmental responsibility to reduce the amount of waste sent to landfills or incineration by focusing on reducing the amount of materials procured and put into waste streams.

Safer Chemicals

Chemicals are a part of health care. They are used in construction and maintenance, in building materials and furnishings, for cleaning and disinfection, and in the treatment of our patients, and they end up in our waste. That’s why it’s important that we work towards reducing and eliminating staff, patient, and visitor exposure to harmful chemicals by improving chemical purchases, and management, use, and disposal practices.

Health care organizations have an environmental responsibility to work within the Canadian Environmental Protection Act to increase management of and exposure to chemicals in products and operations.



Table of Contents

Executive Summary

Our Story

- Provincial Health Services Authority: “Better health. Best in health care.”
- Sustainability successes
- A real need for action
- Our new climate reality
- Future of Health Care survey

This Is Who We Are.

We’re Finding Solutions: Together.

Writing the Story We Want, Now and in the Future

Downloads

Provincial Health Services Authority CNAR ↓

Provincial Health Services Authority Dashboard ↓

Lower Mainland Health Authorities Dashboard ↓

2.4 Our new climate reality

Climate change and its associated environmental problems are a real, clear, and present danger to which neither Canada nor British Columbia is immune.

In fact, according to [Canada’s Changing Climate Report](#), commissioned by Environment and Climate Change Canada, Canada’s rate of warming is twice that of the world rate, with an average over land temperature increase of 1.7°C since 1948. Average precipitation is also increasing. In turn, our country is facing increased risk of seasonal flooding, more powerful wildfires, seasonal water shortages, and rising sea levels leading to coastal flooding.^E

Our province is not immune. If climate change is not mitigated, it is anticipated that B.C. will face a further temperature increase of 1.3°C by 2050, resulting in longer growing seasons but more frequent, harsh droughts; outbreaks of new infectious diseases and pests; heat waves; decreased quality and quantity of drinking water; competition for resources, including electricity; strain on drainage and sewer systems; encroachment by seawater on aquifers; and more severe weather events.^F

All of these conflicts will have significant, negative impacts on individual and population health.

Since our new climate reality affects social and environmental determinants of health, it often results in poorer physical and mental health outcomes via increased and more

severe injury, mental health challenges, illness, and disease.^G For example, studies indicate that as B.C.’s wildfire season grows longer with bigger, more frequent fires, asthma, emphysema, and other respiratory conditions are expected to worsen.^H

With our new climate reality having such direct effects on health, the health care system will face new challenges, even as weather events and consequent damage to infrastructure, disruption of supply chains, and changes to energy systems affect health care facilities and health services.^I From acute shocks (“sudden, sharp events that can compromise health service delivery”^J) such as flooding to roadways and health care facilities, to chronic stresses (“slow-moving disasters that can weaken the fabric of health facilities and systems over time”^J) such as heat waves that make maintaining air temperature and quality a challenge, climate change means a new reality.

The effects of climate change are well-documented and immediate, but so too is the willingness of PHSA staff and leadership to take action. By continuing to build on strategies and solutions that have already been uncovered at PHSA, we can make environmental sustainability a reality.



E. <https://www.cbc.ca/news/technology/canada-warming-at-twice-the-global-rate-leaked-report-finds-1.5079765>

F. <https://www2.gov.bc.ca/gov/content/environment/climate-change/adaptation/impacts>

G. https://www2.gov.bc.ca/assets/gov/environment/climate-change/adaptation/health/final_climate_and_health_backgrounder_communities.pdf

H. https://www2.gov.bc.ca/assets/gov/environment/climate-change/adaptation/health/final_climate_and_health_backgrounder_frontline_health_care.pdf

I. https://bcgreencare.ca/system/files/resource-files/VCH%202-pager_executive-summary_May2019.pdf

J. <https://www.egbc.ca/getmedia/10a2c62e-2815-40f5-830e-e844441c5add/VCH-ClimateReport-Appendices-Final-181025.pdf.aspx>

Table of Contents

Executive Summary

Our Story

- Provincial Health Services Authority: “Better health. Best in health care.”
- Sustainability successes
- A real need for action
- Our new climate reality
- Future of Health Care survey

This Is Who We Are.

We’re Finding Solutions: Together.

Writing the Story We Want, Now and in the Future

Downloads

Provincial Health Services Authority CNAR ↓

Provincial Health Services Authority Dashboard ↓

Lower Mainland Health Authorities Dashboard ↓

2.5 Future of Health Care survey

Early in 2019, a “Future of Health Care” survey, administered by the GreenCare Energy & Environmental Sustainability team, was conducted across Fraser Health, Providence Health Care, Provincial Health Services Authority, and Vancouver Coastal Health.

This biennial survey was conducted for the following purposes:

Respondent breakdown

Clinical staff: **59%**
 Operational (corporate) staff: **33%**
 Support services staff: **4%**
 Facilities management staff: **4%**

To measure

To measure performance and influence of PHSA’s environmental sustainability targets and goals



To inform

To inform the energy & environmental sustainability strategic framework and overall related program strategy



To build

To build staff awareness and enable change towards greater environmental stewardship within the workplace



About the Survey

The margin of error is plus-or-minus 4%, 19 times out of 20. This indicates a high level of confidence that the results are representative of the organization at large.

The results led to a high level of confidence, with Fraser Health, Provincial Health Services Authority, and Vancouver Coastal Health data being representative of the organization at large.

Although Providence Health Care had a higher margin of error, its results do provide an indication of trends in behaviours and beliefs. However, these results need to be further researched and understood to accurately determine the results with a small margin of error.

Table of Contents

Executive Summary

Our Story

- Provincial Health Services Authority: “Better health. Best in health care.”
- Sustainability successes
- A real need for action
- Our new climate reality
- Future of Health Care survey

This Is Who We Are.

We’re Finding Solutions: Together.

Writing the Story We Want, Now and in the Future

Downloads

Provincial Health Services Authority CNAR ↓

Provincial Health Services Authority Dashboard ↓

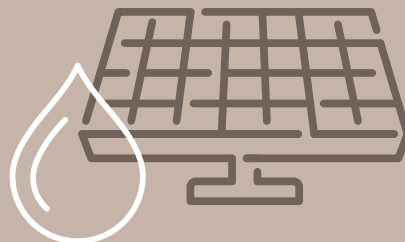
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2.5 What do PHSA staff have to say about environmental sustainability?

Staff respondents indicated their support for environmental sustainability actions in the workplace, reporting the following:

Energy & Water

On average, staff feel that education campaigns for energy conservation should be PHSA’s priority for the Smart Energy & Water Focus Area.



Waste & Toxicity

On average, staff feel that developing new methods of material waste diversion (e.g. recycling) and developing a repurposing process for waste items in good condition should be PHSA’s priorities for the Zero Waste & Toxicity Focus Area.

Workplace Leadership

On average, staff feel that staff coaching and mentorship on greening of one’s workplace, as well as funding opportunities for greening one’s workspace, should be the main priorities for the Workplace Leadership Focus Area at PHSA.



Active & Clean Transportation

In terms of how PHSA could better provide resources/incentives for clean transportation:

69%

of staff would like public transit discounts.

39%

of staff would like telecommuting/ opportunities to work from home.

31%

of staff would like financial incentives to use a bicycle for commuting or work purposes.

Table of Contents

Executive Summary

Our Story

- Provincial Health Services Authority: “Better health. Best in health care.”
- Sustainability successes
- A real need for action
- Our new climate reality
- Future of Health Care survey

This Is Who We Are.

We’re Finding Solutions: Together.

Writing the Story We Want, Now and in the Future

Downloads

Provincial Health Services Authority CNAR ↓

Provincial Health Services Authority Dashboard ↓

Lower Mainland Health Authorities Dashboard ↓

2.5 What do PHSA staff have to say about climate resilience and adaptation?

In addition to the focus areas, Climate Resilience & Adaptation is an important part of taking meaningful action in response to the new climate reality.

- The majority of staff (**55%**) reported being unaware of climate change-related negative impacts them or their work (e.g. heat, wildfires, rain, snow, drought, or floods).
- For those who said that they were aware of such impacts of climate change, wildfires (**29%**), air quality (**18%**), extreme temperature (**13%**), and extreme weather (**10%**) were cited.
- The vast majority (**72%**) of staff reported feeling unprepared for and unsupported to deal with climate-related negative impacts.

In terms of how staff felt PHSA could better prepare them for climate-related negative impacts:

58%

said awareness and education.

9%

said contingency planning.



Table of Contents

Executive Summary

Our Story

This Is Who We Are.

- Senior executive team
- The GreenCare team
- Frontline health care professionals

**We're Finding
Solutions: Together.**

**Writing the Story We Want,
Now and in the Future**

Downloads

**Provincial Health Services
Authority CNAR** ↓

**Provincial Health Services
Authority Dashboard** ↓

**Lower Mainland Health
Authorities Dashboard** ↓

3.0 This Is Who We Are.

Environmental sustainability
is everyone's story.

Table of Contents

Executive Summary

Our Story

This Is Who We Are.

- Senior executive team
- The GreenCare team
- Frontline health care professionals

**We're Finding
 Solutions: Together.**

**Writing the Story We Want,
 Now and in the Future**

Downloads

**Provincial Health Services
 Authority CNAR ↓**

**Provincial Health Services
 Authority Dashboard ↓**

**Lower Mainland Health
 Authorities Dashboard ↓**

Everyone at PHSA has a part to play in supporting the sustainability of health care and the quality of life of both our workforce and the communities we serve.

Through expertise, hard work, and commitment to health care, we can all continue to support GreenCare goals, maintain accountability in environmental performance, and ensure that PHSA responds to the new climate reality and its effect on both the health authority and the region. When surveyed, PHSA staff recognized

the valued role of leadership in the environmental sustainability story, with 84% strongly agreeing that the Lower Mainland health care organizations should demonstrate leadership when it comes to environmental health and wellness in the workplace and our communities.

3.1 Senior executive team^A

Carl Roy

President and Chief Executive Officer

Appointed President & CEO in January 2014, Carl Roy brings to the role more than 30 years of experience in both the public and private health care sectors. He is known for his commitment to innovative change, people-focused management, and a passion for solving challenges.

Linda Lupini

Executive Vice President
 Commercial Services

In her role, Linda Lupini brings over 25 years of experience to the Commercial Services portfolio and leads a number of services, including, but not limited to, Business Initiatives & Support Services, Biomedical Engineering, Supply Chain & Procurement, Health Information Management, Facilities Management, and Health Emergency Management BC.

Susan Wannamaker

Executive Vice President,
 Clinical Service Delivery

Kendra McPherson

Vice President,
 Transformation & Sustainability

Thomas Chan

Executive Vice President,
 Corporate Services & Chief Operating Officer

Dr. Maureen O'Donnell

Executive Vice President,
 Clinical Policy, Planning & Partnerships

Catherine Syms

Vice President,
 Legal, Privacy & Risk



Donna Wilson

Executive Vice President,
 People and Diagnostic & Treatment Services

Ron Quirk

Executive Vice President,
 Digital Information Services & Innovation

- Senior executive team
- The GreenCare team
- Frontline health care professionals

3.2 The GreenCare Team

Transforming health care for a thriving environment of health and wellness.

Under the guidance of the Consolidated Lower Mainland Facilities Management, Fraser Health, Providence Health Care, Provincial Health Services Authority, and Vancouver Coastal Health have adopted similar sustainability policies to help govern and bring accountability to environmental sustainability work across their organizations. In addition, these policies provide a high-level statement of commitment to efforts to improve the sustainability of these health organizations.

As per these policies, the Energy and Environmental Sustainability (EES) team was created in 2010 to ensure a collaborative energy and environmental sustainability approach that systematically embeds environmental, economic, and social sustainability policies, principles, and processes across the four Lower Mainland health care organizations. In partnership with many other groups, EES integrates and enhances sustainability infrastructure and practices in a variety of programs. These programs include energy and carbon reduction, climate resilience and adaptation, recycling and waste reduction, safer chemicals, active and clean transportation, and workplace leadership. The overall mission is to upgrade infrastructure, raise awareness of and build capacity for sustainability practices in health care, foster collaborations, and educate, engage, and inspire participation in a variety of areas for a thriving, healthy environment.

PHSA Commitment to Sustainability

PHSA is mindful of the importance of developing a triple-bottom-line approach to sustainability, one that balances ecological, societal, and economic imperatives and recognizes the link between a healthy environment and a healthy population. As such, PHSA recognizes a duty to minimize its environmental impact.

Lower Mainland Health Care Organizations

Fraser Health

Provincial Health Services Authority

Providence Health Care

Vancouver Coastal Health

Lower Mainland Facilities Management

Brent Krusche | Vice President Informatics, Technology and Facilities

Paul Becker | Chief Facilities Management Officer

Mauricio Acosta | Executive Director, Business Performance & Corporate Support

Energy & Environmental Sustainability Team*

Robert Bradley | Director of Energy & Environmental Sustainability

Sabah Ali

Energy Coordinator

Sarah Currie

Sustainability Consultant, Workplace Leadership

Marianne Dawson

Sustainability Consultant, Recycling and Waste Reduction

Ghazal Ebrahimi

Sustainability Consultant, High Performance Buildings

Glen Garrick

Sustainability Manager

Alex Hutton

Energy Manager, PHSA and PHC

Sonja Janousek

Sustainability Consultant, Environmentally Preferable Purchasing and Safer Chemicals

Kori Jones

Energy Manager, VCH

Jeson Mak

Energy Manager, FH

Cathy McDonald

Energy Specialist

Jacob Vu

Energy Specialist

Richard Wellwood

Energy Specialist

Angie Woo

Climate Resilience & Adaptation Lead

*As of 2018.12.31

- Senior executive team
- The GreenCare team
- Frontline health care professionals



3.3 Frontline health care professionals

The employees, physicians, nurses, volunteers, and health care partners of PHSA are committed to the values of respect, caring, and trust in pursuit of providing the best health care possible to every individual across the PHSA region.

Over 19,000 employees and 4,000 students training annually across 8 core sites^B also understand and are taking action to mitigate the effects of the new climate reality, particularly through their support of and participation in Energy and Environment Sustainability strategies and programs in the

workplace. They have made environmental sustainability their story, as demonstrated by the success stories in [Section 4.4](#). Given the tools and opportunity to continue to build on their actions, they will continue to play a key role in transforming health care.

B. Core sites are defined as health care facilities that are actively monitored for energy, water, and/or waste efficiency (primarily owned and operated sites).

Table of Contents

Executive Summary

Our Story

This Is Who We Are.

**We're Finding
Solutions: Together.**

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

**Writing the Story We Want,
Now and in the Future**

Downloads

**Provincial Health Services
Authority CNAR ↕**

**Provincial Health Services
Authority Dashboard ↕**

**Lower Mainland Health
Authorities Dashboard ↕**

4.0

We're Finding Solutions: Together.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

4.1 Our GreenCare initiative

Embedding Environmental Health and Wellness

At the core of its work, the EES team has created guidelines for health care facility design, construction, and operations to ensure that our strategies for environmental (and human) health and wellness are embedded into the design and processes of our facilities. Implementation of these strategies is supported by the Consolidated Lower Mainland Facilities Management.

The following best practices in design and construction are considered in the creation of these guidelines:

- 1 [Leadership in Energy and Environmental Design for Health Care \(LEED HC\)](#): LEED HC is a global green-building rating system that provides a framework for creating healthy, sustainable, energy- and cost-efficient health care buildings. A LEED certification is recognized globally as a sustainability achievement. The final designation (rating) is determined by the independent Green Building Council.
- 2 Healthy Built Environment: [The Healthy Built Environment Linkages Toolkit](#) is maintained by the Population and Public Health team at the BC Centre for Disease Control, under the leadership of the BC Healthy Built Environment Alliance Steering Committee. The Toolkit is intended to support the inclusion of health considerations within community planning and design.

A. While this is one of the focus areas, the EES team is re-evaluating the programs and overall work being conducted in support of achieving regenerative design.

The GreenCare Strategic Framework

The GreenCare Strategic Framework outlines the following focus areas and associated missions:

- 1 Smart Energy & Water: Minimize energy and water consumption, as well as GHG emissions, to reduce costs and environmental impacts, helping to ensure the health, wellness, and resiliency of our living environments.
- 2 Zero Waste & Toxicity: Minimize waste generated and toxic chemicals used by the health care system and supporting operations.
- 3 Active & Clean Transportation: Ensure a health care system in which employees travel between sites in a manner that reduces GHG-related pollutants, minimizes the need for on-site parking, and increases overall health and wellness.
- 4 Workplace Leadership: Together, we will reach, engage, and inspire staff in health care to be leaders that share a commitment to and passion for sustainable and thriving healthy communities, workplaces, and environments.
- 5 Regenerative Design^A: Create sustainable and resilient built-environments that enhance the health and wellness of the people they serve, as well as the ecosystems they inhabit.

During this time no formal goals, targets, or programs will be organized. It is planned that in 2019 a refreshed regenerative design portfolio of work will be launched.



PHSA CNAR

Each year, along with all public sector organizations, B.C.'s health authorities submit a Carbon Neutral Action Report (CNAR) to the Climate Action Secretariat of the provincial government. In this mandated reporting of greenhouse gas emissions and other data, and current and planned actions to reduce GHG emissions, CNARs detail our progress toward carbon neutrality.

Download:
PHSA CNAR ↓

Table of Contents

Executive Summary

Our Story

This Is Who We Are.

**We're Finding
Solutions: Together.**

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

**Writing the Story We Want,
Now and in the Future**

Downloads

**Provincial Health Services
Authority CNAR ↓**

**Provincial Health Services
Authority Dashboard ↓**

**Lower Mainland Health
Authorities Dashboard ↓**

4.2 These are our GreenCare Focus Areas.

Each of the following focus areas has an associated target and measurable Key Performance Indicator (KPI) for that goal. The targets and KPIs provide a baseline, measure, and direction for reaching specific 2020 and 2030 goals.

Smart Energy & Water



Zero Waste & Toxicity



Active & Clean Transportation



Workplace Leadership



- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.



1. Smart Energy & Water^B

The use of energy and water—what these resources are used for and how much of them are consumed—affects human health through its impact on the environment.

In generating energy, fossil fuel combustion pollutes the air we breathe and contributes to a negative impact on the environment and, consequently, human health. Minimizing energy and water consumption and greenhouse gas (GHG) emissions to reduce environmental impacts and costs can help to ensure the health and wellness of our living environments.

Achieving the Smart Energy & Water goals means stewarding these resources and their utilities. The Lower Mainland health care organizations are continually looking for opportunities to reduce the amount and intensity of energy and water use and greenhouse gas emissions from health care operations. Efficiency measures and water-conserving infrastructure do more with less, thereby lowering our environmental footprint without compromising patient care or employee comfort.

Our Goals

- 1 Reduce energy use intensity (EUI) of core sites.
- 2 Reduce absolute in-scope GHG emissions.
- 3 Reduce absolute in-scope GHG emissions intensity.
- 4 Reduce water use intensity (WUI) of core sites.

Current programs include:

- [Energy Management](#)
- [Greenhouse Gas Emissions Management](#)
- [Water Management \(under development\)](#)

B. 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 PHSA'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 which include Stationary Fuel Combustion and Electricity (buildings); Mobile Fleet Combustion (fleet and other equipment); and Supplies (paper).

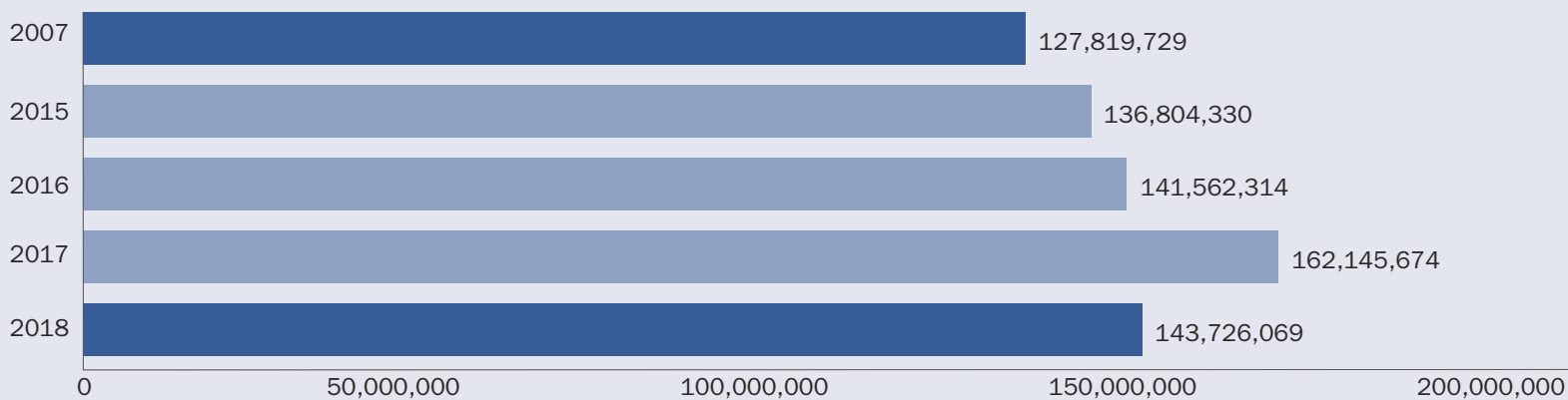
- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Context

Energy consumption of core health care sites (weather adjusted ekWh)^{C,D}

14% ↑

The increase in overall energy consumption from 2007 to 2018, in relation to the amount of facility space monitored for energy consumption growing 39% since 2007



Weather adjusted ekWh

C. Data includes electrical, natural gas, and fuel oil. Data is also normalized according to weather. Data is for core sites only.

D. Core sites refers to health care sites that are actively monitored and reported on separately for energy, water, and/or waste.

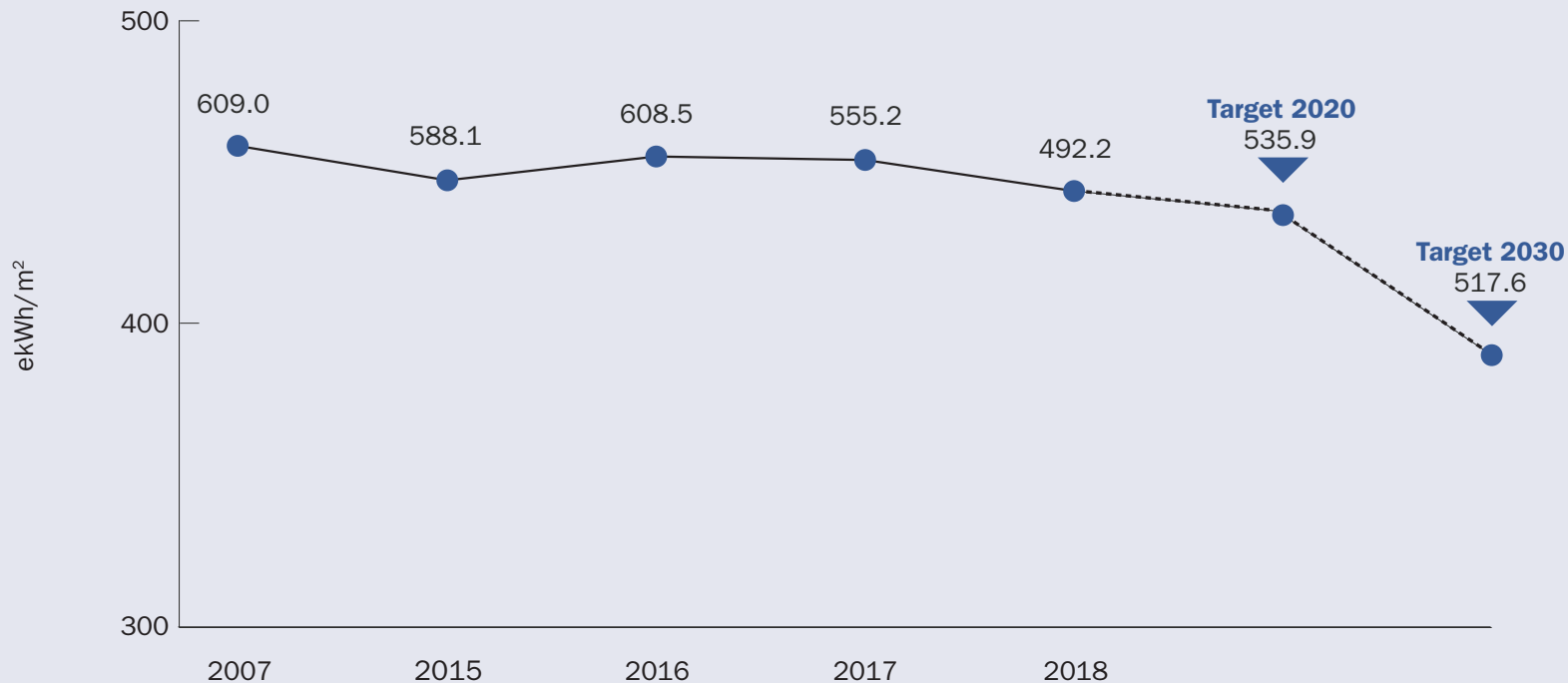
- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Performance

Energy use intensity (EUI)
 (ekWh/m²) of core sites^E

17.9% ↓

The decline in energy use intensity
 from 2007 to 2018

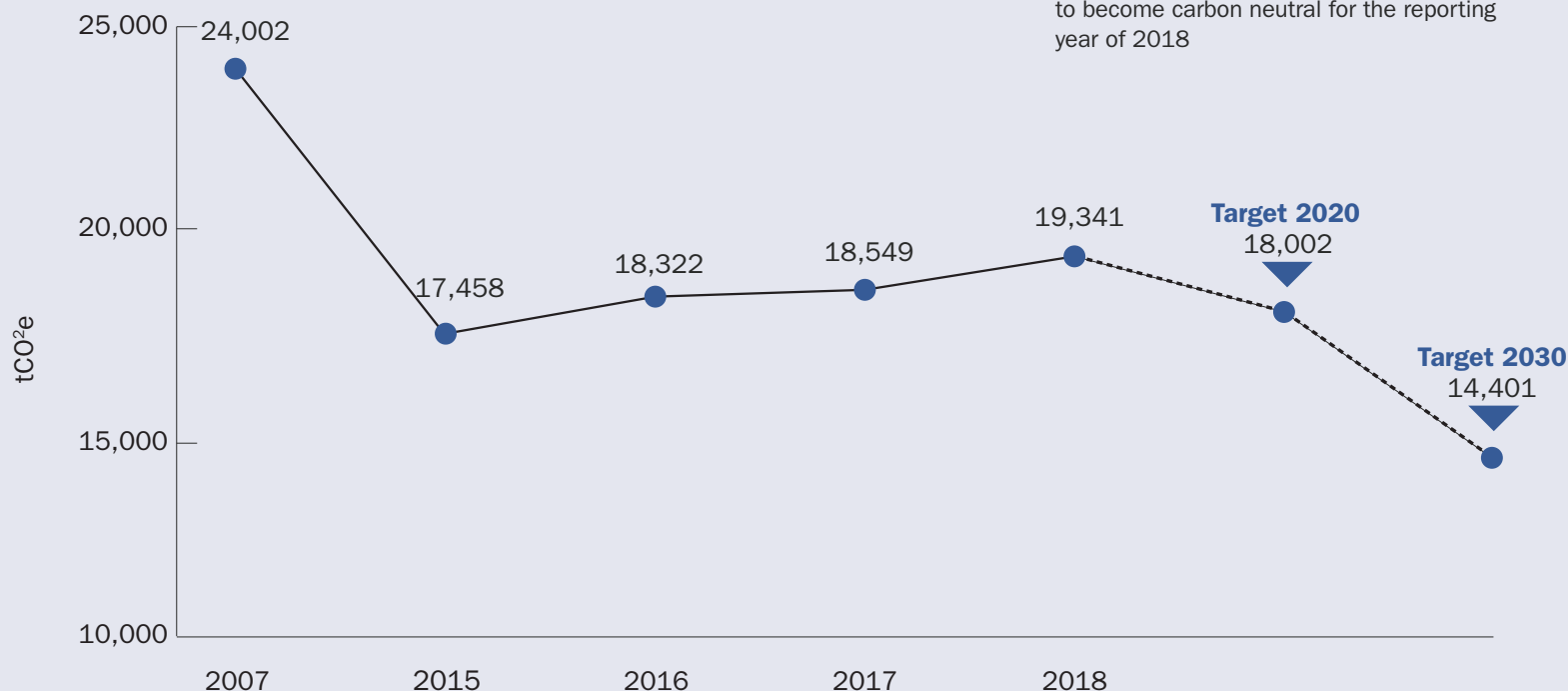


E. Core sites refers to health care sites that are actively monitored and reported on separately for energy, water, and/or waste.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Performance

Organizational carbon footprint in tCO₂e^{F,G}



19.4% ↓

The decline in absolute CO₂ footprint since 2007

PHSA has achieved carbon neutrality every year since 2010.

\$507,701

The total value of carbon offsets paid by PHSA to become carbon neutral for the reporting year of 2018

F. Annual total includes reductions for BioCO₂, for which no offsets are required.

G. The carbon footprint is derived by analyzing the data from ALL PHSA sites. Measure includes all core and non-core sites.

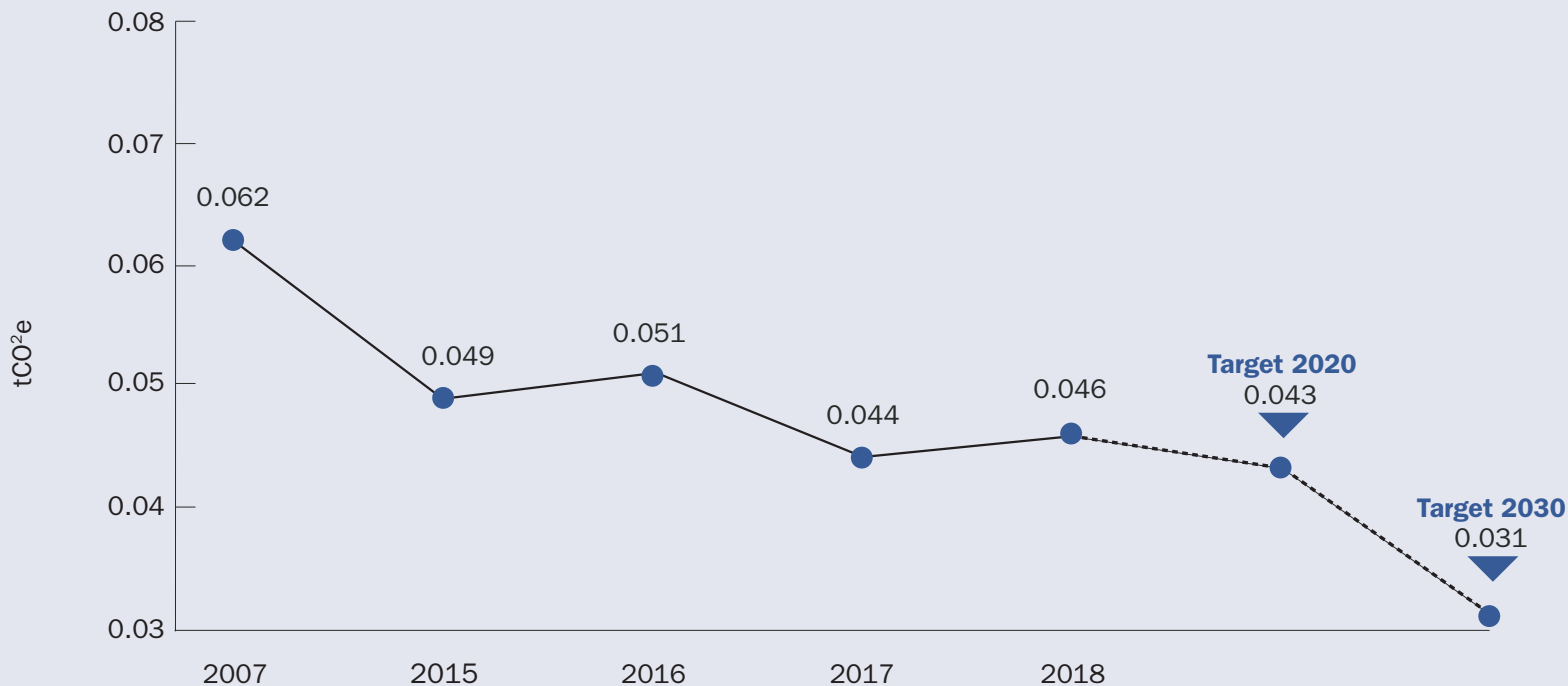
- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Performance

**Organizational CO₂e footprint intensity
(tCO₂e/usable sq. metre of facility space)^H**

25.9% ↓

The decrease in CO₂ footprint intensity since 2007



H. The carbon footprint is derived by analyzing the data from all core and non-core PHSA sites.

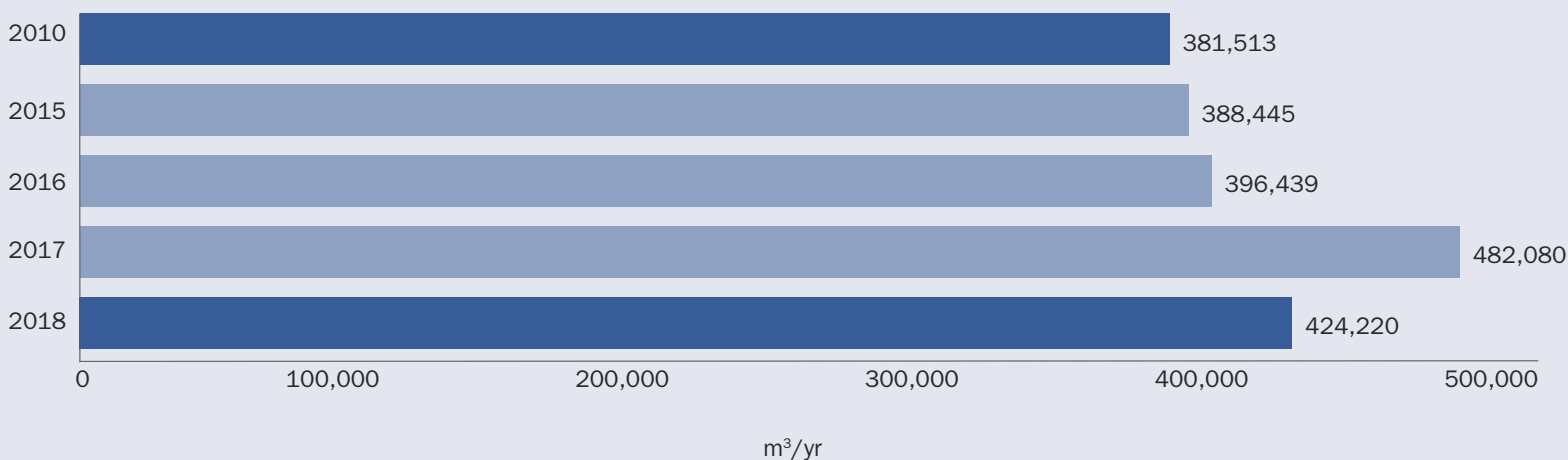
- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Context

Building water consumption (m³/yr)

11.2% ↑

The change in overall water consumption since 2010, with a 30% rise in the total amount of facility space monitored for water consumption



- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Performance

Building water performance intensity (BWPI) (m³/yr/m²)

11.8% ↓

Decline in building water performance
intensity since 2010

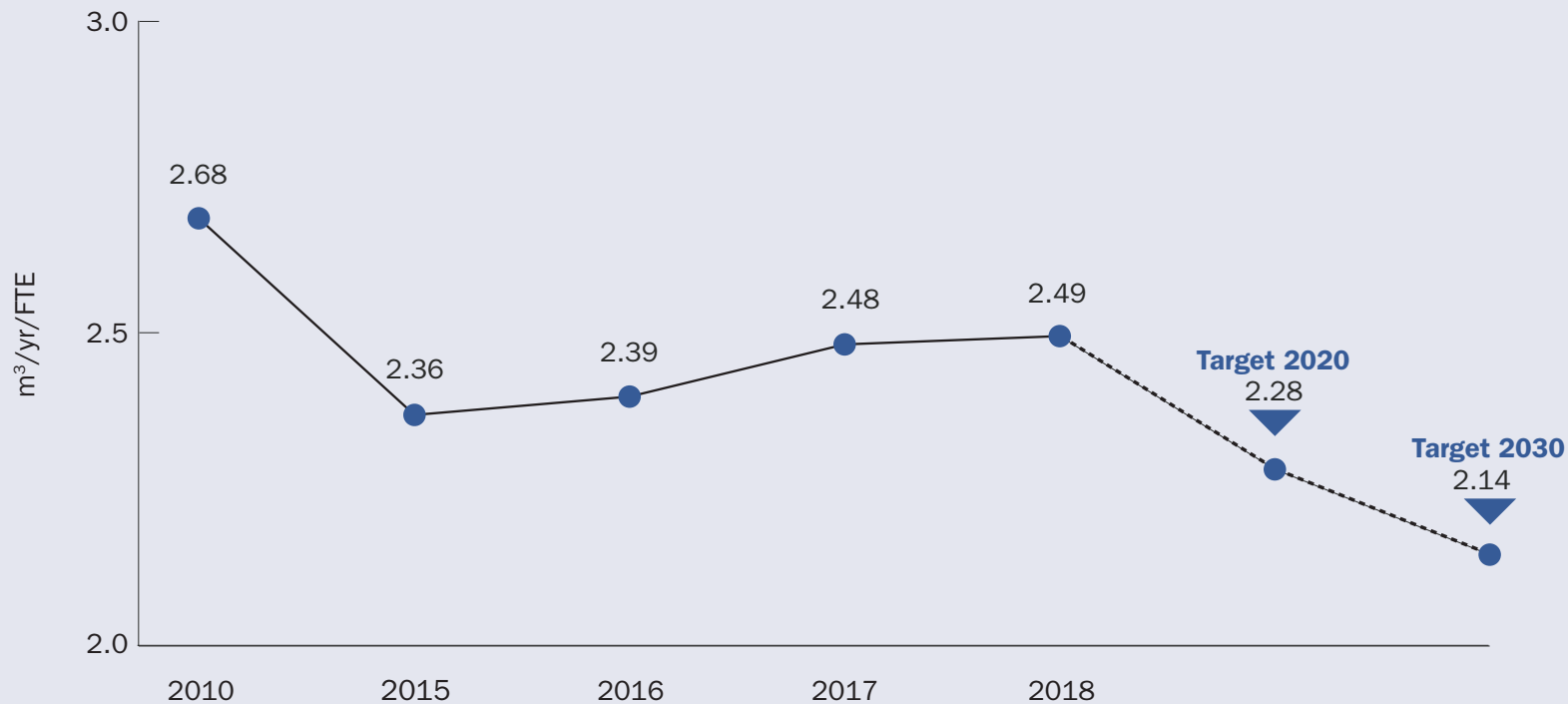


Table of Contents

Executive Summary

Our Story

This Is Who We Are.

**We're Finding
 Solutions: Together.**

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

**Writing the Story We Want,
 Now and in the Future**

Downloads

**Provincial Health Services
 Authority CNAR ↓**

**Provincial Health Services
 Authority Dashboard ↓**

**Lower Mainland Health
 Authorities Dashboard ↓**

What do PHSA staff have to say about energy and water consumption?

Our staff are already taking action to conserve energy and water, and would welcome the opportunity to do more to advance environmental sustainability.

According to our survey of PHSA staff, while the majority (**66%**) feel personally responsible for the amount of energy they use at work, **21%** remain undecided, and **13%** expressed that they do not feel personally responsible for their energy use at work. However, less

than half (**42%**) feel they have the ability to control the amount of energy they use at work, **24%** remain undecided, and just over a third (**34%**) feel they do not have the ability to control their energy use at work.

- The majority (**72%**) of staff reported always turning off the desk light/office light when away, and **11%** said that they want to do this more.
- While less than a third (**30%**) of staff reported always taking the stairs instead of the elevator, **13%** said that they want to do this more.
- While only **28%** of staff reported always generally looking for ways to save energy in their workspace, **19%** said that they want to do this more.
- While only **3%** of staff reported always working remotely/telecommuting, **33%** said that they want to do this more.



Education

Staff were asked to rank how they feel PHSA should prioritize initiatives within Smart Energy & Water. The average ranking of priorities that emerged is as follows:

- 1 Education campaigns for energy conservation
- 2 Education campaigns for water conservation
- 3 Education campaigns for climate change, risk, and resilience
- 4 Education campaigns for carbon emissions

Table of Contents

Executive Summary

Our Story

This Is Who We Are.

We're Finding

Solutions: Together.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Writing the Story We Want, Now and in the Future

Downloads

Provincial Health Services Authority CNAR ↓

Provincial Health Services Authority Dashboard ↓

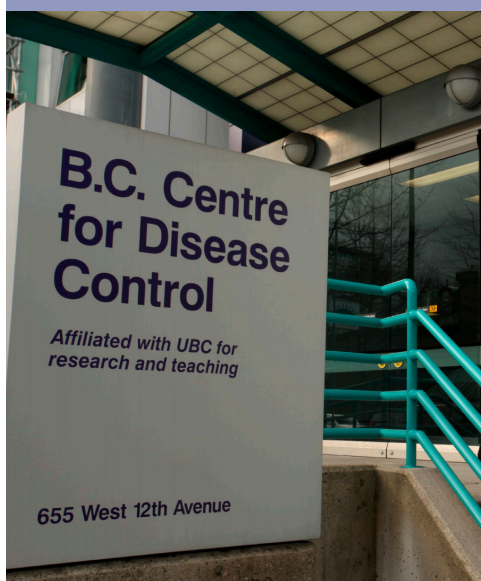
Lower Mainland Health Authorities Dashboard ↓

What do PHSA staff have to say about energy and water consumption? cont.

What's happening at the BC Centre for Disease Control?

It should be noted that individual self-reported sentiments about energy and water consumption varied per site within PHSA.

- **42%** of staff feel personally responsible for the amount of energy they use at work.
- **33%** feel they have the ability to control the amount of energy they use at work.



How is BC Children's Hospital doing?

- **55%** of staff feel personally responsible for the amount of energy they use at work.
- Only **42%** feel they have the ability to control the amount of energy they use at work.



- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.



2. Zero Waste & Toxicity

In health care settings, reducing waste and exposure to toxins produces better health outcomes for staff and patients, decreasing the risk of disease.

In the broader environment, scaling down the use of toxic chemicals and waste decreases greenhouse gas emissions and negative impacts on water, soil, and air, thereby reducing associated health impacts such as respiratory and cardiovascular disease, cancer, endocrine disruption, and birth defects.

PHSA is working to reduce the negative environmental and health impacts of waste and toxins by focusing on programs that avoid and reduce material waste from being generated in the first place, divert material waste to recycling streams and reuse programs, and reduce and monitor the use

of toxic chemicals in health care construction, furnishings, maintenance, cleaning, and patient care.

Our Goals

- 1 Increase waste diversion rates at existing acute and long-term care sites.
- 2 Decrease waste intensity rates at existing acute and long-term care sites.
- 3 Increase waste diversion rates at all new health care construction projects.

Current programs include:

- [Blue Bin](#)
- [Environmentally Preferable Purchasing \(EPP\)^I](#)
- [Safer Chemicals^I](#)

I. Currently, there are no targets for EPP and Safer Chemicals.

Table of Contents

Executive Summary

Our Story

This Is Who We Are.

**We're Finding
Solutions: Together.**

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

**Writing the Story We Want,
Now and in the Future**

Downloads

**Provincial Health Services
Authority CNAR ↕**

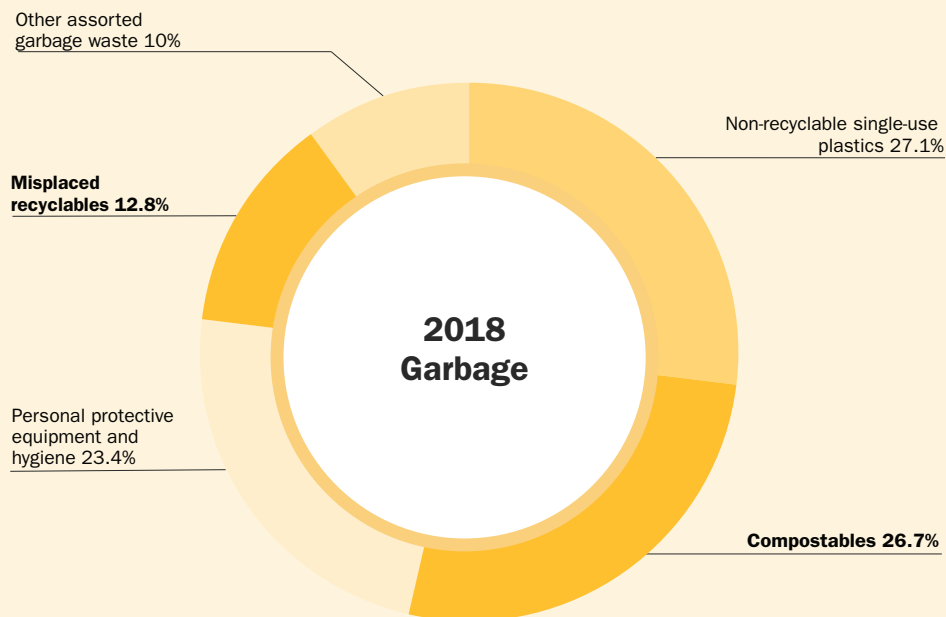
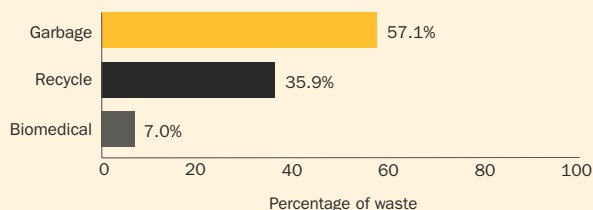
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Authority Dashboard ↕**

**Lower Mainland Health
Authorities Dashboard ↕**

Context

There are opportunities for PHSA-owned facilities to reduce garbage by properly disposing of **compostables** and **misplaced recyclables**.

Waste proportions for PHSA owned facilities^J



J. Data is assumed for all acute and long-term care facilities and is based on composition data from a 2018 study of clinical units in one Lower Mainland acute care site.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Performance

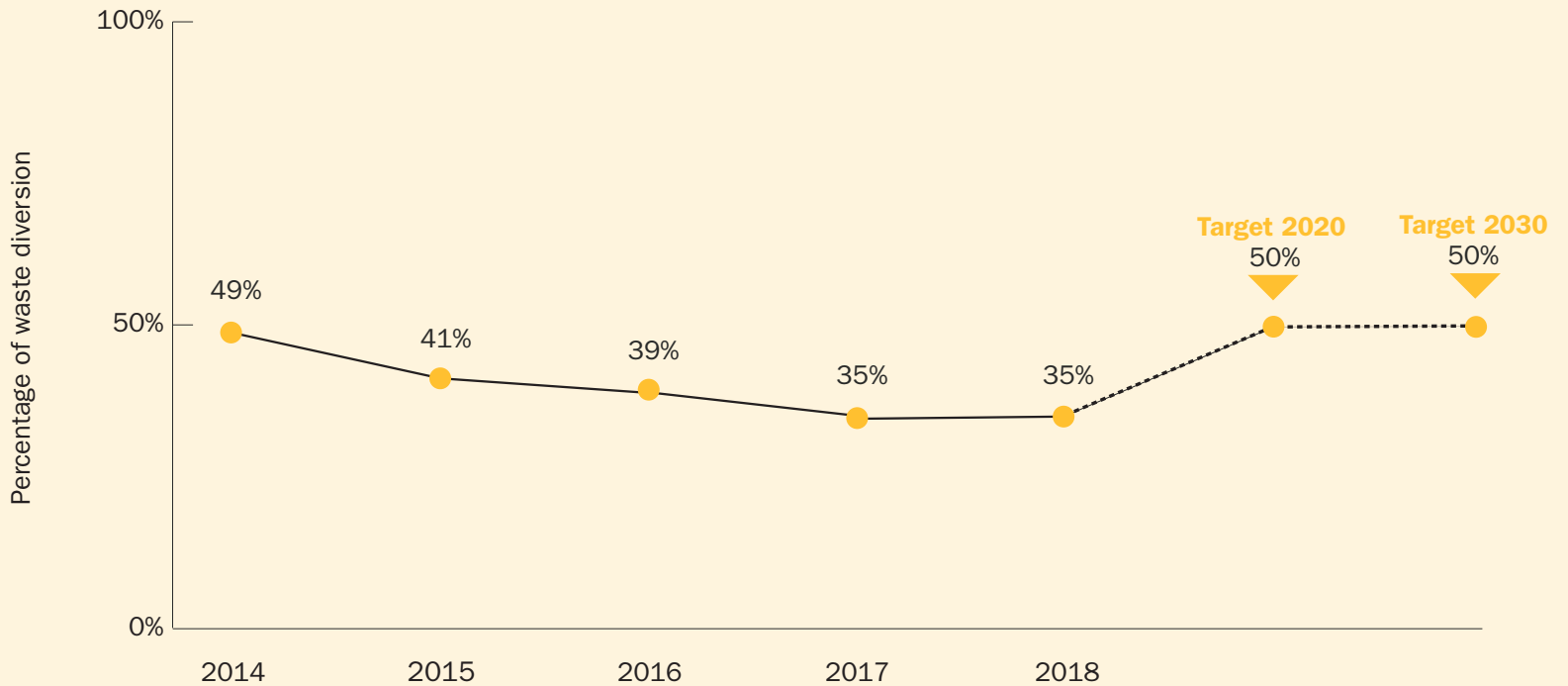
Due to circumstances around current global recycling markets and the prioritization of internal infection control, opportunities to increase waste diversion rates within the health care sector has been challenging. The long-term objective is to consistently maintain

diversion rates above 50%. Until external circumstances change and stronger behaviors and processes are established internally, it is felt that the 2020 and 2030 targets should be maintained at the same level.

14.4% ↓

The decrease in PHSA's material waste diversion rates since 2014

Waste diversion rates at existing acute and long-term care sites^K



K. Diversion rates were negatively impacted in 2014 with the changing of recycling vendors and the elimination of soft plastics being recycled.

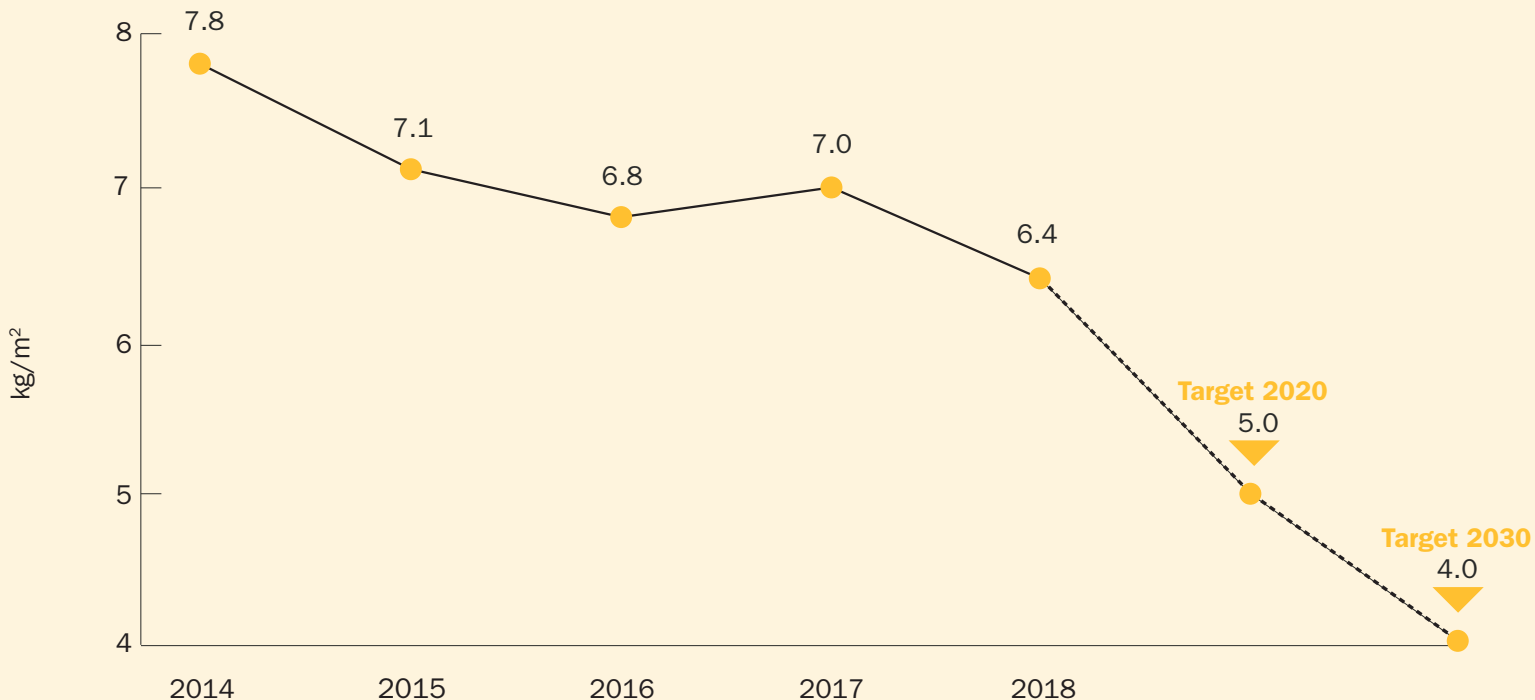
- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Performance

Waste intensity rates at existing acute and long-term care sites (kg/m²)^L

18.4% ↓

The decrease in waste intensity rates since 2014



L. Includes (core) PHSA acute and long-term care facilities

Table of Contents

Executive Summary

Our Story

This Is Who We Are.

**We're Finding
Solutions: Together.**

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

**Writing the Story We Want,
Now and in the Future**

Downloads

**Provincial Health Services
Authority CNAR ↕**

**Provincial Health Services
Authority Dashboard ↕**

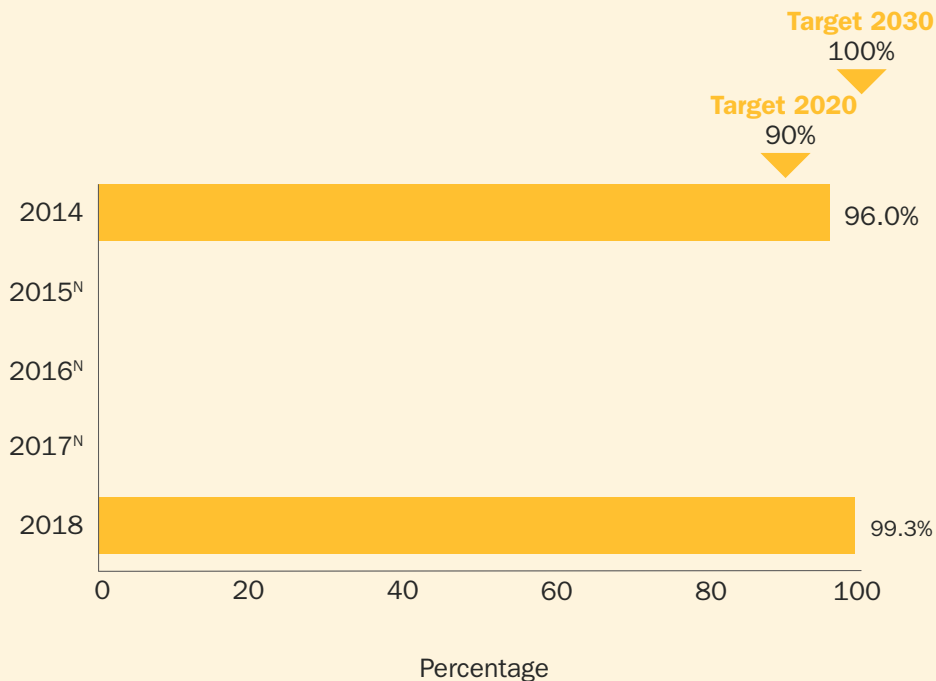
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Performance

Waste diversion rates for construction projects^M

PHSA strives, through recovering, reusing, and/or recycling, to reduce construction and demolition waste, which is sent to landfills and/or incineration facilities. At present, reliable performance data is only obtained from projects seeking LEED certification and

pursuing the Construction and Demolition Waste Management Planning credit. This information is communicated through the report analysis and awarding of LEED certification.



M. Waste diversion rates only measured on LEED registered projects.

N. PHSA had no completed new construction projects in 2015, 2016, and 2017.

Table of Contents

Executive Summary

Our Story

This Is Who We Are.

We're Finding
 Solutions: Together.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Writing the Story We Want,
 Now and in the Future

Downloads

Provincial Health Services
 Authority CNAR ↓

Provincial Health Services
 Authority Dashboard ↓

Lower Mainland Health
 Authorities Dashboard ↓

What do PHSA staff have to say about waste and toxicity?

In the survey, staff clearly indicated that they support environmentally sustainable decision making, and are already changing their behaviours.

- **80%** of staff said that they always recycle mixed paper.
- **68%** of staff said that they always recycle mixed containers.
- **70%** of staff said that they always choose tap/filtered water instead of individually bottled water.
- While only **37%** of staff said that they always divert/compost organic waste, **21%** said that they want to do this more.

Education

PHSA staff were asked to rank how they feel PHSA should prioritize initiatives within Zero Waste & Toxicity. The following were determined to be the top four priorities within Zero Waste & Toxicity:

- 1 Develop new methods of material waste diversion (e.g. recycling).
- 2 Develop a repurposing process for waste items in good condition.
- 3 Develop department-specific, environmentally preferable purchasing toolkits (e.g. guides to green purchasing).
- 4 Develop a chemicals-of-concern policy statement for our hospitals and health care sites.



What's happening at the BC Centre for Disease Control?

It should be noted that individual self-reported waste disposal behaviours varied per site within PHSA.

- **82%** of staff said that they always recycle mixed containers (e.g. hard plastic and tin), and **6%** said that they want to do this more.
- The majority (**68%**) of staff said that they always divert/compost organic waste, and **6%** said that they want to do this more.

How is BC Children's Hospital doing?

- While only **17%** of staff said that they always divert/compost organic waste, **35%** said that they want to do this more.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.



3. Active & Clean Transportation

Active transportation (walking and cycling) helps to reduce the risk of disease, the effects of psychological stress, and the negative physical impact of a sedentary lifestyle.

Clean transportation (walking, cycling, carpooling, and transit) reduces greenhouse gas emissions and contributes to environmental and human health by reducing consumption of fossil fuels and resulting air pollution. For instance, if all employees of PHSA were to commute via an active and clean manner, approximately 500 fewer metric tonnes of carbon dioxide would enter the environment annually.

To achieve Active & Clean Transportation goals, our employees must be supported in their choice to use active and clean transportation. PHSA is committed to providing infrastructure that supports the use of sustainable modes of transportation.

Goals

- 1 Improve health care staff commutes via cleaner and healthier means (i.e. other than single occupancy vehicles).
- 2 Increase portion of core sites that provide end-of-trip (EOT) bicycle facilities/storage options.

Current programs include:

- [Active and Clean Transportation](#)

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Context

Health care staff that commute via cleaner and healthier means (%)

3.5% ↑

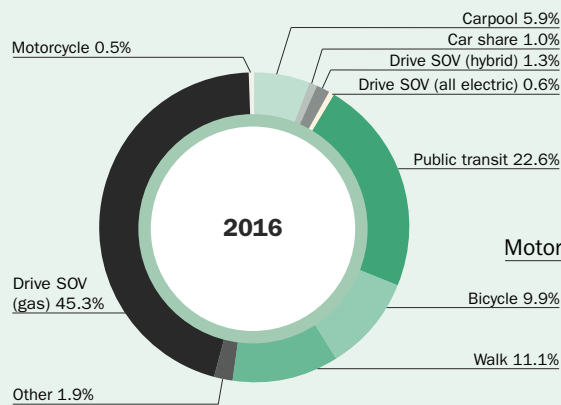
The increase in staff commuting via cleaner and healthier means since 2016



- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

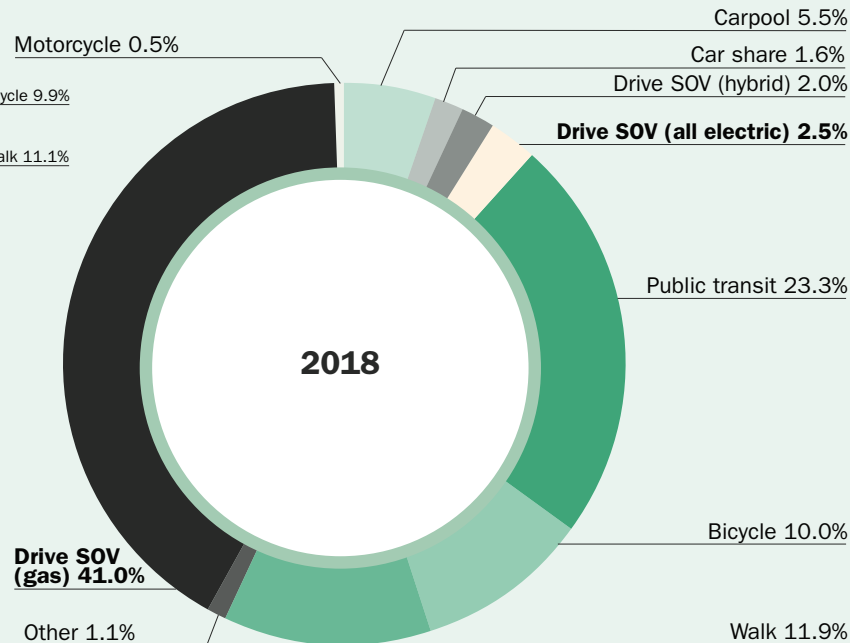
Context

Staff commute: percentage of time per mode



1.9%↑

The increase in electric vehicle use from 2016 to 2018



Considered healthy options

- Carpool: carpool.ca, etc.
- Car share: Car2go, Evo, Modo, Zipcar
- Drive: single occupancy vehicle (hybrid)
- Drive: single occupancy vehicle (all electric)

- Public transit: bus, rail, ferry/sea bus —includes walk to train/bus stop
- Bicycle: pedal and electric
- Walk
- Other: scooter, shuttle, etc.

Considered unhealthy options

- Drive: single occupancy vehicle (gas)
- Motorcycle

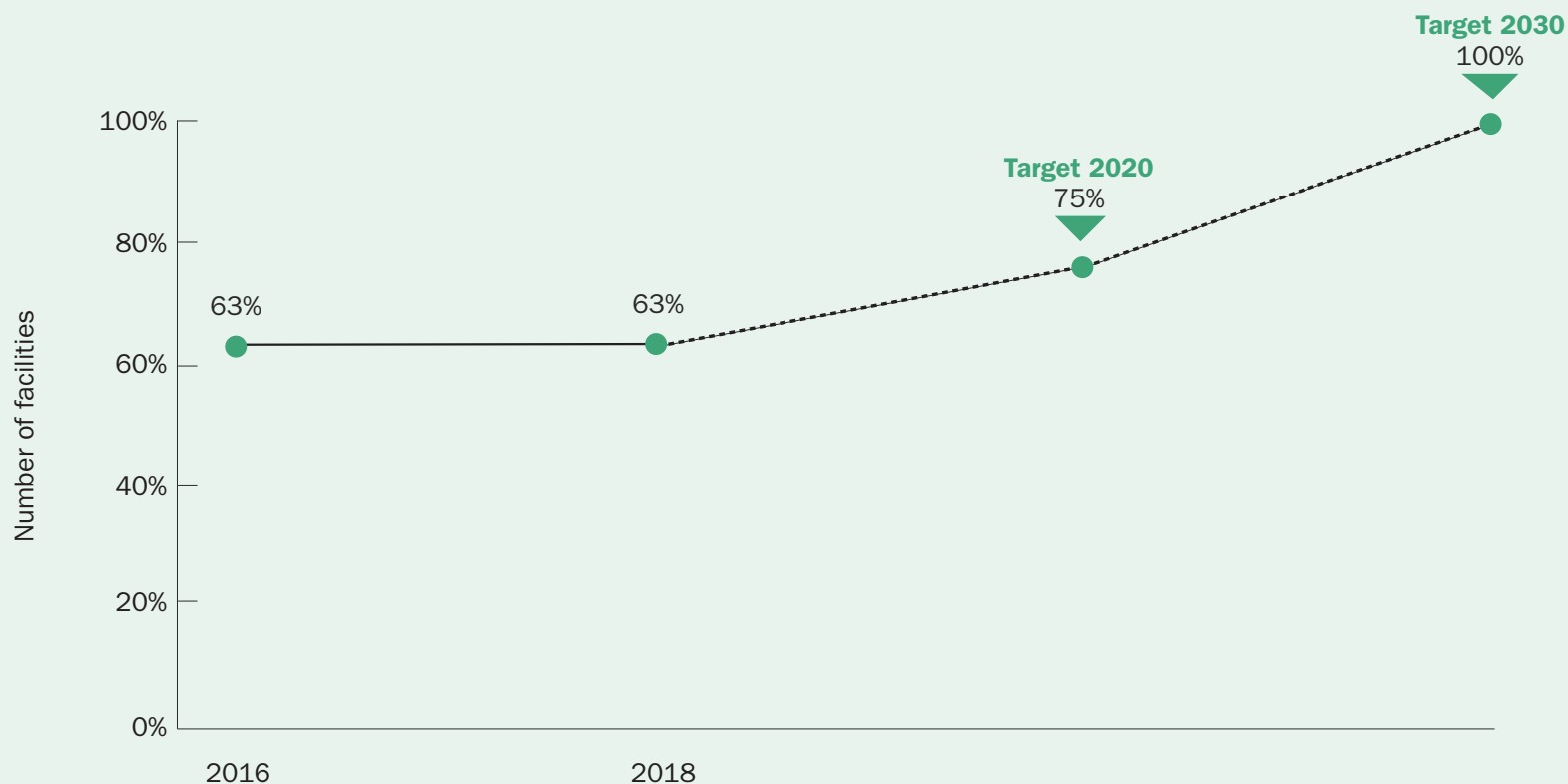
- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Performance

Number of health care sites with end-of-trip (EOT) bicycle facilities⁰

0%

The change in the total number of PHSA sites with EOT facilities from 2016 to 2018



0. EOT bicycle facilities are defined as facilities providing secure space for bicycle racks, lockers, and/or change rooms where cyclists, joggers, and walkers can shower, change, and secure their personal belongings. Bicycle

storage or parking areas should be accessible to users and located within the facility or on site within reasonable walking distance of a primary entrance of the site.

Table of Contents

Executive Summary

Our Story

This Is Who We Are.

We're Finding Solutions: Together.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Writing the Story We Want, Now and in the Future

Downloads

Provincial Health Services Authority CNAR ↕

Provincial Health Services Authority Dashboard ↕

Lower Mainland Health Authorities Dashboard ↕

Context

PHSA supports annual fall and springtime Bike to Work Weeks. Though not directly stated as a goal with targets, participation rates of staff and their kilometres ridden and greenhouse gases (GHG) avoided are important to note. PHSA staff are continuing to make a difference through their everyday decision making.

337

Staff registered to ride in the spring/fall Bike to Work Weeks in 2018 (compared to 249 staff registered in 2017)

3,827

Trips logged by staff in the spring/fall Bike to Work Weeks in 2018 (compared to 3,087 trips in 2017)

30,048_{km}

Total distance biked by staff participants in the spring/fall Bike to Work Weeks in 2018 (compared to 26,293 km in 2017)

6,514_{kg}

GHG avoided via staff participation in the spring/fall Bike to Work Weeks in 2018 (compared to 5,699 kg in 2017)



- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

What do PHSA staff have to say about active & clean transportation?

In the survey of PHSA staff, when asked, “How far do you commute (round trip) in one typical work day?”, **22%** of staff said 11-20 km, **20%** said 21-40 km, **18%** said 2-5 km, **17%** said 6-10 km, **12%** said 41+ km, and **11%** said less than 2 km.

Staff reported commuting to work via driving a single occupancy gas vehicle **41%** of the time, via public transit (bus, rail, etc.) **23%** of the time, via walking **12%** of the time, and via a manual bicycle **9%** of the time over the course of a year.

With regards to transportation areas that staff wish PHSA would provide more resources/incentives for:

- **62%** of staff would like public transit discounts.
- **35%** of staff would like telecommuting/opportunities to work from home.
- **28%** of staff would like a financial incentive to use a bicycle for commuting or work purposes.
- **25%** of staff would like walking incentives.
- **21%** of staff would like carpooling/ridesharing opportunities.
- **15%** of staff would like hospital shuttle service opportunities.
- **13%** of staff would like electric vehicle (EV) charging stations.
- **12%** of staff would like carsharing opportunities (e.g. Modo, Zipcar, Car2go, etc.).
- **9%** of staff would like secure bike facilities.
- **9%** of staff would like showers and lockers associated with/adjacent to the bike facility.



The percentage of time spent commuting via single occupancy gas vehicles varies from site to site. For instance, staff from the BC CDC reported commuting to work via driving a single occupancy gas vehicle **35%** of the time, via public transit (bus, rail, etc.) **30%** of the time, and carpooling **9%** of the time over the course of a year, while staff from BC Children's Hospital reported commuting to work via a single occupancy gas vehicle **46%** of the time, via public transit (bus, rail, etc.) **19%** of the time, via manual bicycle **10%** of the time, and via walking **8%** of the time over the course of a year.

The Future of Electric Vehicle (EV) Ownership

34%

of staff plan to own an EV.

38%

of staff do not own an EV and do not plan to own one.

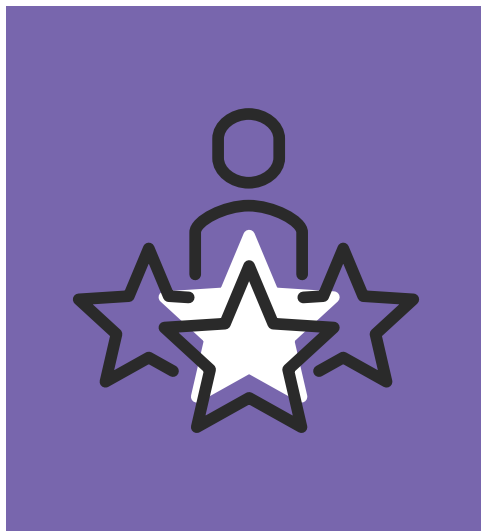
23%

of staff are unsure about owning an EV.

5%

of staff currently own an electric vehicle.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.



1102

Total number of PHSA staff that have registered on the GreenCare website

4. Workplace Leadership

Formerly called “Culture Change”, this focus area was renamed after a series of discussions and feedback sessions.

Culture change is the desired outcome of effective workplace leadership, and this can be experienced at all levels in health care. Focusing on Workplace Leadership emphasizes the importance of people, self, and the impact that true leadership can have on workplace culture, and fostering leadership at various levels of an organization.

The Workplace Leadership team has learned from staff that inadequate awareness of the range of ways to participate and engage in environmental sustainability workplace practices presents a real barrier to the realization of project ideas that would support the collaborative greening of workplaces and processes. To achieve Workplace Leadership

goals, all employees, in all departments, and at all levels of Lower Mainland health care organizations must be exposed to relevant information and ideas via on-point communication tactics; offered training that enables them to lead and influence their colleagues; provided opportunities to contribute in areas of programmatic interest; and actively involved in the advancement of current and evolving sustainability policies.

The [GreenCare Community website](#) is a primary tool currently used to engage staff across the Lower Mainland health care organizations.

Goals

- 1 Decrease the GreenCare Community website bounce rate through stronger awareness of brand and resources.
- 2 Increase the e-newsletter click rate^P by improving the deeper effectiveness, beyond simple open rates,^Q of the GreenCare online engagement levels.
- 3 Increase the number of Green+Leaders across the organization through direct training of staff.
- 4 Increase the number of health care staff actively aware of and informed on how workplace decisions and processes can support environmental conservation and greenhouse gas (GHG) reduction.

Current programs include:

- [Green+Leaders](#)

P. Click rate is a percentage that tells you how many successfully delivered e-newsletters registered at least one click.

Q. Open rate refers to the percentage of a number of subscribers who open an email.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Performance

BC GreenCare Community website % bounce rate^R

56.8%↑

The increase in bounce rate since 2014. A refresh is needed.



R. Bounce rate refers to the percentage of visitors who enter the site and then leave after viewing only one page.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Performance

GreenCare e-newsletter click rate^S

Since 2017 the Survey Monkey web tool has been used to deliver and monitor click rates of the e-newsletter.



S. Click rate is a percentage that tells you how many successfully delivered e-newsletters registered at least one click or view from the Internet.

T. In 2016, newsletters were Microsoft Outlook generated and the EES team was unable to determine click rates for that year.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Performance

Number of new, trained Green+Leaders

268

The number of PHSA Green+Leaders trained to date. With no change in staff engagement rates from 2017 to 2018, it is expected the engagement rates will rebound in 2019.



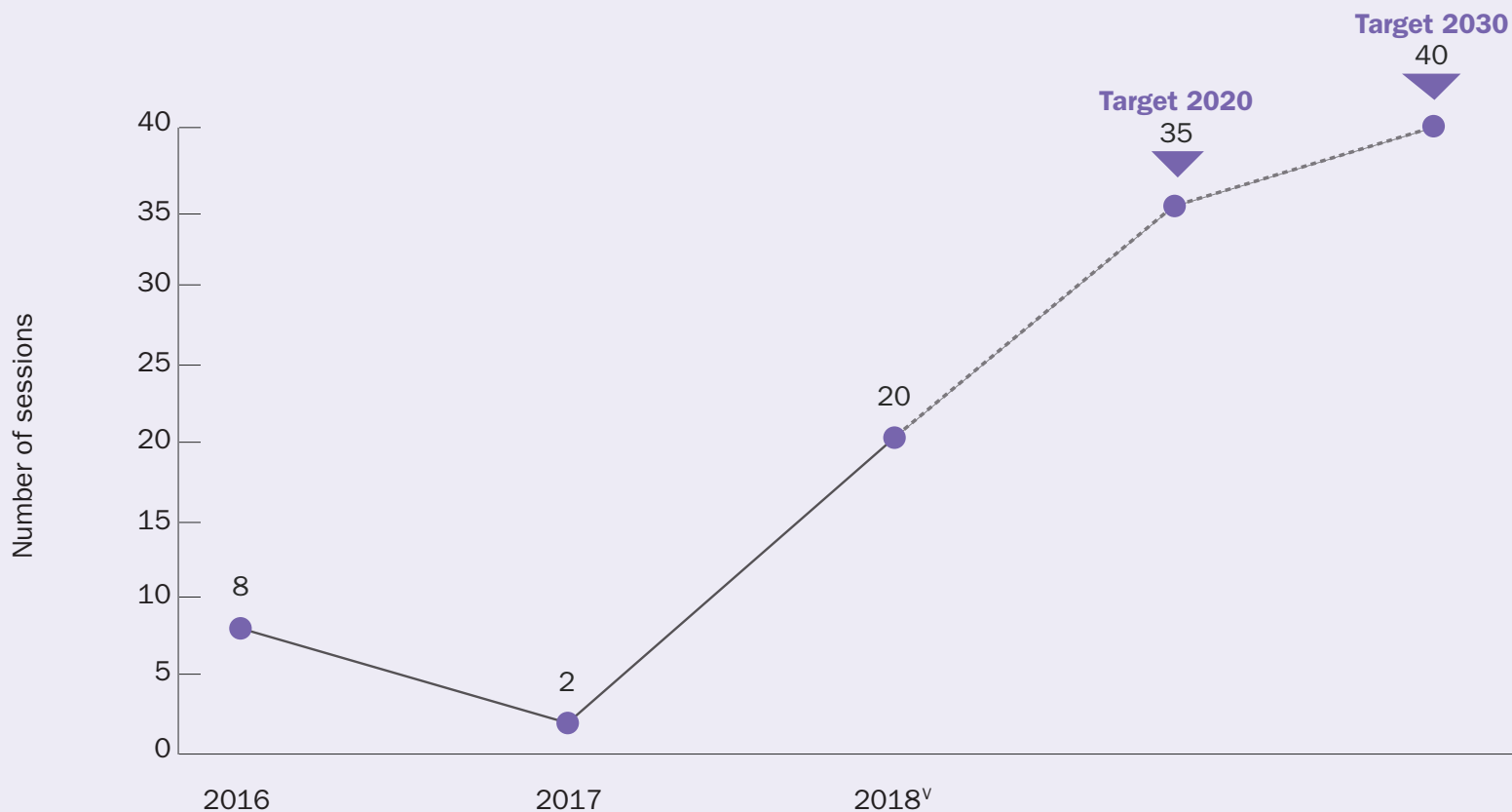
- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
 - Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

Performance

Number of GreenCare education or training sessions^U

18

The increase in GreenCare education sessions from 2017 to 2018



U. Since 2012, BC Hydro has sponsored two different energy conservation programs directed at staff behaviour ("Workplace Conservation Awareness" and "EnergyWise").

V. In 2018, several EES programs consolidated efforts around presentations and educational/training sessions.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
 - Smart Energy & Water
 - Zero Waste & Toxicity
 - Active & Clean Transportation
- Workplace Leadership
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

What do PHSA staff have to say about workplace environmental policies and programs?

In the survey of PHSA staff, in regards to familiarity with policies and programs to address the new climate reality within the workplace, staff expressed a need to know more:

- **73%** said they are not at all familiar with the Health Authority Environmental Sustainability Policy, but **11%** said that they would like more information on this.
- **64%** said they are not at all familiar with the Health Authority GreenCare initiative, but **13%** said that they would like more information on this.
- **72%** said they are not at all familiar with the Health Authority Energy & Environmental Sustainability (construction) Design Guidelines, but **11%** said that they would like more information on this.
- **52%** said they are not at all familiar with the Health Authority Green+Leaders program, but **10%** said that they would like more information on this.
- **72%** said they are not at all familiar with the GreenCare Community website, but **12%** said that they would like more information on this.



Prioritizing Workplace Leadership

Staff were asked to rank how they feel PHSA should prioritize initiatives within Workplace Leadership. The average ranking of priorities that emerged is as follows:

- 1 Staff coaching and mentorship on greening of your workplace
- 2 Funding opportunities for the greening of your workplace
- 3 Creation of an online learning hub on environmental sustainability in health care
- 4 In-person sessions to share knowledge, success stories, and best practices



Table of Contents

Executive Summary

Our Story

This Is Who We Are.

**We're Finding
Solutions: Together.**

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

**Writing the Story We Want,
Now and in the Future**

Downloads

**Provincial Health Services
Authority CNAR ↕**

**Provincial Health Services
Authority Dashboard ↕**

**Lower Mainland Health
Authorities Dashboard ↕**

4.3 This is what we've done: the 2018 Dashboard.

Goals ^A	Key Performance Indicators (KPIs) and Baseline (if applicable)	2018 Results	2020 Targets	"Traffic Light"	2030 Targets
--------------------	--	--------------	--------------	-----------------	--------------



Smart Energy & Water

Minimize energy & water consumption and GHG emissions to reduce costs and environmental impacts, helping to ensure the health and wellness of our living environments.

Reduce Energy use intensity (EUI) of core sites. ^B	EUI (ekWh/m ² /year) (2007 Baseline)	19.2%	12%	●	15%
Reduce absolute in-scope GHG emissions. ^C	GHG emissions (tCO ₂ e/year) (2007 Baseline)	19.0%	25%	●	40%
Reduce in-scope GHG emissions ^C intensity.	GHG emissions intensity (tCO ₂ e/year/m ²) (2007 Baseline)	26.0%	30%	●	50%
Reduce building water (use) performance intensity (BWPI) of core sites. ^B	BWPI (m ³ /m ² /year) ^D (2010 Baseline)	11.8%	10%	●	20%



Zero Waste & Toxicity

Minimize waste generated and toxic chemicals used by the health care system and supporting operations.

Increase waste diversion rates at existing acute and long-term care sites. ^E	Percentage of waste diverted (annual average)	35%	50%	●	50%
Decrease waste intensity rates at existing acute and long-term care sites. ^F	WI (metric tonnes/m ² /year)	6.4	5	●	4
Increase waste diversion rates at all new health care construction projects. ^G	Percentage of waste diverted (annual average)	99.3%	90%	●	100%

- Work on track, ahead of schedule, or exceeding
- Work on track but requires monitoring
- Work in progress but falling behind schedule

- A. The goals/targets are derived through a review of best practices and stakeholder engagement.
- B. Facilities that are actively monitored for energy and water efficiency (primarily owned and operated sites).
- C. "Absolute" emissions refers to total emissions regardless of growth change. "In-scope" emissions are from owned and leased buildings, fleet travel, and paper use (as defined in relation to the GHG Reduction Targets Act). Provincial Health Services Authority's absolute emissions

- have gone up in relation to expanded services, including an increase in facilities space and staffing. But overall intensity has gone down.
- D. It is recognized that water consumption is more directly influenced by staff count per facility. Due the uncertain and changing nature of staff counts, for the time being facility space is used for the intensity metric.
- E. Waste diversion data does not include segregated bio-medical waste.

- F. This is a new goal as of 2018.
- G. "New" construction projects is defined as any completely new builds and does not currently include renovations because determining the performance data on renovations is seen as too inconsistent and difficult at this time. The \$150,000 value aligns with the Facilities Owner Project Requirements threshold.

Goals	Key Performance Indicators (KPIs) and Baseline (if applicable)	2018 Results	2020 Targets	"Traffic Light"	2030 Targets
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Active & Clean Transportation

Ensure a health care system in which employees commute/travel between sites in a manner that reduces GHG-related pollutants, minimizes the need for onsite parking, and increases overall health and wellness.

Increase the % of health care staff that commute via cleaner and healthier means (i.e. alternatives to single occupancy vehicles) ^H	Percentage of annual staff commute via cleaner and healthier means (2016 Baseline)	57.8%	60%	●	75%
Increase portion of core sites that provide end-of-trip (EOT) bicycle facilities/storage options ^I	Percentage of core sites with EOT facilities	62.5%	75%	●	100%



Workplace Leadership^J

Together, we will reach, engage, and inspire staff in health care to be leaders that share a commitment to and passion for sustainable and thriving healthy communities, workplaces, and environments.

Decrease the GreenCare Community website bounce rate through stronger awareness of brand and resources. ^K	Annual BC GreenCare website percentage bounce rate ^L	56.8%	45%	●	35%
Increase the e-newsletter click rate by improving the deeper effectiveness, beyond simple open rates, of the GreenCare online engagement levels. ^K	Average annual click rate of the Green+Leaders e-newsletter ^M	11.5%	15%	●	30%
Increase the number of Green+Leaders across the organization through the direct training of staff.	A year-over-year percentage increase in the number of trained Green+Leaders	3.1%	10%	●	15%
Increase the number of health care staff actively aware and informed on how work place decisions and processes can support environmental conservation and GHG reduction. ^{K,N}	The annual number of BC GreenCare related presentations, and educational and/or training sessions	20	35	●	40

- Work on track, ahead of schedule, or exceeding
- Work on track but requires monitoring
- Work in progress but falling behind schedule

H. The performance data for staff commuting is determined through an annual survey of staff across the health care organizations. Using a confidence interval of 95%, the survey attained the following margins of error: maximum amount by which the results are expected to differ from those of the actual population, for Fraser Health (3%), Providence Health Care (10%), Provincial Health Services Authority (4%), and Vancouver Coastal Health (4%).

I. End-of-trip facilities must include a minimum of 1 on-site shower/changing facility and a minimum of bicycle secure storage for 5% of on-site staff.

J. Though the Workplace Leadership focus pertains to all targets in all focus areas, specific targets have been set for this topic area.

K. These goals are new but seen as more accurate measures of success in this focus area.

L. Bounce rate refers to the percentage of visitors who enter the site and then leave after viewing only one page.

M. Click rate is a percentage that tells you how many successfully delivered e-newsletters registered at least one click.

N. This performance data indicator includes only the number of GreenCare education or training sessions conducted by the Energy & Environmental Sustainability team.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

4.4 There's still a lot that we need to do.

Under the guidance of the Consolidated Lower Mainland Facilities Management, much work has been done to implement GreenCare programs to help each of Fraser Health, Providence Health Care, Provincial Health Services Authority, and Vancouver Coastal Health meet their GreenCare targets and objectives.

The work isn't finished. Continuing to make decisions that support and advance these programs will support environmental sustainability across PHSA, as will efforts and ideas that fall outside of these programs. We're all part of the story of environmental sustainability. Tips, suggestions, and feedback are always welcome at the [GreenCare website](#).

Our Programs

Energy Management

Health care is one of the most energy intensive sectors of the economy, which makes responsible energy management a critical area of environmental focus. The Energy Management program seeks to reduce reliance on fossil fuels and overall energy consumption, thereby reducing negative environmental impacts and supporting human health.

The program develops strategic partnerships and strong relationships with a wide range of stakeholders—particularly maintenance and operations teams, projects and planning teams, consultants, and utility providers—to identify and implement energy reduction opportunities. It also undertakes measurement and reporting on key energy performance indicators and benchmarks,

connects with internal sustainability consultants on systemic and behavioural change initiatives, and monitors and tracks project funding.

A few initiatives included in the energy reduction strategy are as follows:

- Energy studies to determine project opportunities
- Boiler plant upgrades and district energy solutions
- Control system optimization
- Heat recovery chiller installations
- Behavioural change pilot campaigns for energy conservation

Program staff partner with FortisBC and BC Hydro to attract funding support for energy conservation and efficiency projects, with the incentives received from industry partners used to supplement the project funding. The implementation of these projects directly reduces operating expense and the environmental impact of Lower Mainland health care organization sites.



Table of Contents

Executive Summary

Our Story

This Is Who We Are.

**We're Finding
Solutions: Together.**

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

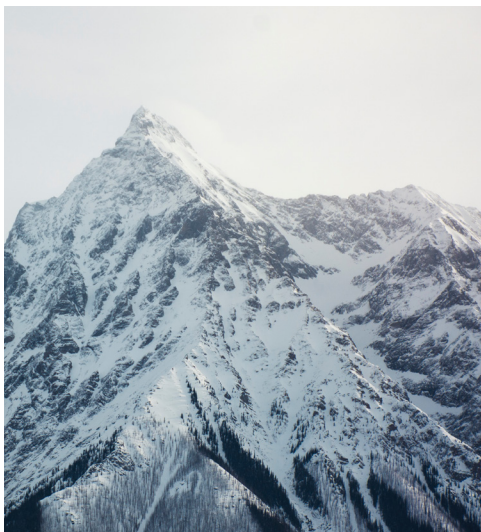
**Writing the Story We Want,
Now and in the Future**

Downloads

**Provincial Health Services
Authority CNAR ↓**

**Provincial Health Services
Authority Dashboard ↓**

**Lower Mainland Health
Authorities Dashboard ↓**



Greenhouse Gas Emissions Management

The focus of the Greenhouse Gas Emissions Management program is to reduce greenhouse gas (GHG) emissions and align with the Climate Change Accountability Act and CleanBC. Of the total measured emissions generated by Lower Mainland health care sites, over 95% are from buildings while the remaining 5% are from supplies (paper usage) and transportation (fleet and other vehicles) combined. The GreenCare goals and targets for carbon neutral operations will be achieved, generally, by reducing GHG (carbon) emissions and purchasing carbon offsets.

Emission-Reduction Strategies for Buildings

- Reduce operational energy (natural gas and electrical) consumption.
- Optimize existing plants and controls.
- Build new facilities to aggressive performance standards.

- Use district energy and off-site renewable energy generation.
- Embed energy management principles into operating standards.
- Educate and engage employees on energy conservation.
- Reinvest energy savings into projects for further reductions.

**Emission-Reduction Strategies
for Transportation, Supplies, and
Clinical Processes**

- Reduce fleet size and means of fuel consumption.
- Install bicycle infrastructure and encourage clean means of commuting.
- Install electric vehicle charging stations to encourage staff use of electric vehicles.
- Reduce the consumption of supplies such as paper.
- Reduce or recapture anesthetic agents (currently not considered a part of Lower Mainland health care organizations' carbon footprint).

The Greenhouse Gas Emissions Management program supports and works alongside B.C.'s provincial mandate for carbon neutrality across all public sector organizations. Each B.C. health care organization is required by the Province to produce an annual Carbon Neutral Action Report (CNAR) that provides a measure of their carbon footprint along with the steps taken to reduce and neutralize that footprint.

Download the Carbon Neutral Action Reports (CNARs) for British Columbia health care organizations below:

- [Fraser Health CNAR](#)
- [Providence Health Care CNAR](#)
- [Provincial Health Services Authority CNAR](#)
- [Vancouver Coastal Health CNAR](#)
- [Interior Health Authority CNAR](#)
- [Vancouver Island Health Authority CNAR](#)
- [Northern Health Authority CNAR](#)

Water Management

The management of water use is a growing priority not only for health care organizations but for all B.C. residents. PHSA's Water Management program is an integral part of the Province's strategy to address the recurring issue of water shortage across B.C.

The Water Management program, which is still under development, is being created to actively plan, develop, distribute, and optimize the use and possible reuse of water resources by Lower Mainland health care sites. Focused largely on conservation, this program looks to:

- Optimize landscape irrigation.
- Eliminate once-through cooling systems.
- Capture/reuse rainwater.
- Optimize water use through behavioural change.
- Manage sewage and wastewater with the eventual goal to recycle or reuse grey water where applicable.

Table of Contents

Executive Summary

Our Story

This Is Who We Are.

**We're Finding
Solutions: Together.**

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

**Writing the Story We Want,
Now and in the Future**

Downloads

**Provincial Health Services
Authority CNAR ↓**

**Provincial Health Services
Authority Dashboard ↓**

**Lower Mainland Health
Authorities Dashboard ↓**



Blue Bin

The Blue Bin program, administered in partnership with Business Initiatives & Support Services, aims to increase material waste diversion at all owned hospital and long-term care sites, with the target of reaching 50% waste diversion by 2020. The program provides health care sites with recycling equipment and signage, and staff education. As a standardized recycling program, it operates in the same way at every site, making it easier for staff, physicians, patients, volunteers, and visitors to recycle correctly. Clear signage attached to each bin helps to reduce confusion and error at the time of disposal.

Recycling is undertaken in both (appropriate) clinical and non-clinical areas of Lower Mainland sites for the following material waste streams:

- Mixed containers
- Mixed paper
- Organics

**Environmentally Preferable
Purchasing (EPP)**

Purchasing items that consume unnecessary packaging, contain toxic chemicals, and must be disposed of in the garbage or hazardous waste (not recyclable) contributes to the extraction of unnecessary natural resources, greenhouse gas emissions, and air pollution, which are associated with health problems such as asthma, endocrine disruptors, and mental illness. The EPP program aims to decrease the negative impact of building materials and patient care equipment and supplies on environmental and human health.

The program includes the following actions to support the achievement of environmental sustainability goals and targets related to reduced energy and water use, GHG emissions, waste generation, and harmful chemicals:

- Collaboration with clinicians and key departments such as PHSA Supply Chain, Infection Prevention and Control, Workplace Health & Safety, and Facilities Maintenance, in order to signal to health care vendors the importance of environmental and human health
- Making changes to our procurement processes. In 2018, weighted environmental questionnaires were included in procurement processes related to human waste management systems, nursing trays, and adult disposable incontinence.

Safer Chemicals

The Safer Chemicals program aligns with international efforts to recognize that there are chemicals of concern contained in man-made products, including those used in our hospitals for construction, furnishing, maintenance, cleaning, disinfection, and patient care. Chemicals of concern

refer to chemicals that, through credible evidence, have or can have adverse health effects to people or the environment, including carcinogenic and reproductive/development toxicants, and those that are persistent, bioaccumulative, and toxic to the environment.

The Safer Chemicals program aims to develop a strategy across the four Lower Mainland health care organizations that:

- Aligns health care sites with work undertaken by Workplace Health and Safety, Infection Control, and other clinical stakeholders in order to develop toxicity reduction targets and create a pathway towards safer chemicals
- Identifies potential chemicals of concern, including using requests for proposals to ask vendors to declare chemicals of concern in their products
- Develops a list of chemicals of concern for health care site construction and operations

Active & Clean Transportation

This program, administered in partnership with Integrated Protection Services, encourages employees to use active and sustainable modes of transportation to get to work and to travel between sites. These modes contribute to health by offering the benefit of exercise and stress reduction, and by reducing greenhouse gas emissions, road congestion, and parking demand, thereby contributing to a cleaner, pedestrian-friendly environment.

Ongoing initiatives of the Commuter Services program include the following:

- Carpool/rideshare matching
- Electric vehicle charging stations

Table of Contents

Executive Summary

Our Story

This Is Who We Are.

**We're Finding
Solutions: Together.**

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.

**Writing the Story We Want,
Now and in the Future**

**Provincial Health Services
Authority CNAR ↓**

**Provincial Health Services
Authority Dashboard ↓**

**Lower Mainland Health
Authorities Dashboard ↓**



- Interhospital shuttle services
- Public transit support
- Bicycle storage services
- A “bike/walk/ride” GreenCare Community Group that brings staff together to share information about events and campaigns with interested employees
- Participation in the annual Bike to Work Week event organized by HUB (an external, Vancouver organization dedicated to the promotion of cycling)

Green+Leaders

The Green+Leaders program provides direct engagement and support for health care staff in their efforts to create environmentally sustainable workplaces. With approval from their managers, staff volunteers train for and commit to the representative position of Green+Leader for their unit or site. They then set a certain number of

hours per week in which to evaluate their work area for opportunities to reduce its environmental impact and facilitate a positive transformation.

Green+Leaders make a significant contribution to the improvement of the environmental performance of the Lower Mainland health care organizations, with more than 500 trained staff volunteers (working in all areas of health care) now participating in the Green+Leaders program. These individuals are agents of change, encouraging environmentally sustainable behaviour, improving existing processes, and helping to create an overall culture of environmental health and wellness inside and outside the workplace.

The program focuses on behaviour change in the following areas:

- Zero waste and toxicity
- Energy and water conservation
- Active and clean transportation
- Climate resilience and adaptation
- Workplace culture

It also supports Workplace Leadership efforts while providing the following benefits to staff volunteers:

- Training, tools, and leadership development
- Support from a community of like-minded colleagues
- Participation in inspiring and educational events

- Opportunities for making a positive, meaningful impact on workplace and community

Climate Resilience & Adaptation

Launched in March 2016, the Climate Resilience & Adaptation program aims to reduce risks and build resilience at the building, health campus (or “site”), and community (or “off-site”) levels to help ensure that major investments in patient care help us to weather expected and unexpected events in our new climate reality.

Understanding climate hazards, risks, and vulnerabilities are key initial steps in a collaborative and iterative adaptation process that begins during project planning and design. Identification and prioritization of low-carbon adaptation options that are impactful, cost effective, and future forward are essential to creating viable adaptation pathways that extend to the end of infrastructure lifecycles. Planning and implementation paired with monitoring and evaluation will serve to increase the long-term resilience of our health campuses and organizations to climate shocks and stresses.

Health system collaboration among facilities, public health, emergency management, and other building blocks is key to preparing communities for our new climate reality while building resilience for the organization as a whole, and opportunities to seek co-benefits with improved human health and reduced greenhouse gas emissions are identified and integrated into plans and actions wherever possible.^{W,X}

W. <https://bcgreencare.ca/program/climate-resilience-adaptation-program>

X. <https://bcgreencare.ca/climate-resilience-health/executive-summary>

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.



Energy Management Success

Integrating Projects, Systems, and Teams at BC Children's and Women's Hospitals

Numerous concurrent projects have been underway at the BC Children's Hospital and BC Women's Hospital Oak Street campus since the Redevelopment Project began.

A vast array of health care stakeholders as well as design and construction professionals play a role in these combined projects. Efforts have been made to ensure effective coordination and collaboration between all of the projects, and the PHSA's Energy Management team has acted as an integrating force given their involvement in most of the major projects. In 2018, there were several examples of where these efforts to integrate and collaborate paid off.

As part of an analysis of options to achieve the carbon reduction targets, a consulting team was hired to develop a site-wide strategy for carbon reduction. This team included TC

Thermenex Ltd., whose innovative Thermal Gradient Header (TGH) approach allows integration of heating and cooling system to enable significant reuse of waste heat across the campus. Their approach proved to be the most cost effective of the carbon reduction options explored. The results of this analysis provided an integrated, holistic vision and approach to energy and carbon management across the entire site. This vision is now being implemented in phases.

The Thermenex TGH approach not only integrates heating and cooling systems, but it has also led to better integration of projects and teams. The Energy Management

team hired Thermenex to consult on various ongoing projects to ensure that these projects were aligned with and able to benefit from the efficiencies of the long-term vision. During one of the project discussions that ensued, Chief Engineer Zoltan Nagy-Gyorgy was heard exclaiming something to the effect that this level of integration and collaboration was unprecedented and greatly appreciated.

This integration led to several projects adjusting their approach, most notably the Phase 3 Redevelopment Project. Implementing a significant portion of the Thermal Gradient Header began in 2018 as an extension to the Phase 3 Redevelopment Project and funded by the Carbon Neutral Capital Program (CNCP).

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.



Waste Diversion Success

Using Non-Disposable Plates and Cutlery for Office Gatherings

Ming Yi Sung

For the past two years, our office has been using non use-and-throw plates and cutlery for staff gatherings at work. It works very well, new staff also follow the same policy at our office, and this practice has extended to some staff's household events.

Ming Yi Sung, one of the staff who was also a Green+Leader implemented the policy with the leader's support. All staff agreed to join the initiative to help to make a difference for our environment. At the beginning of the initiative, all staff were asked to donate plates/cutlery that they no longer need from

home. We designated a big drawer at the office to store the plates/cutlery so that they are easily accessible.

This change has benefited our organization via financial savings, as we do not have to purchase disposable items for every gathering. Staff morale, engagement, and workplace culture have also improved as staff feel proud to take action to help the environment and are more educated about how small actions can contribute to a greener environment. And, of course, environmental sustainability is improved via waste reduction.

- Our GreenCare initiative
- These are our GreenCare Focus Areas.
- This is what we've done: the 2018 Dashboard.
- There's still a lot that we need to do.



Workplace Leadership Success

BC Cancer-Surrey Increases Waste Diversion Rates and Inspires Other Regional Centres

Adrian White, Senior Leader, Clinical & Systems Transformation with BC Cancer-Surrey, joined the Green+Leaders program in 2015 and has been an active member ever since. Working closely with his colleagues, Adrian has been involved in a number of change initiatives. Two notable projects include both eliminating soft plastic garment bags and recycling thermoplastics—two products that are not currently accepted in the facility's recycling stream.

Eliminating Soft Plastic Garment Bags

Each week, the radiation therapy department was discarding approximately 80 plastic bags. These soft plastics cannot be collected in the recycling bins provided at the site. By providing patients with a paper garment bag instead and educating patients on using personal reusable fabric bags for their daily radiotherapy appointments, Adrian's team successfully reduced the number of plastic garment bags by approximately 65 per week.

Recycling Thermoplastics

Adrian and his team initiated a thermoplastic recycling program for specialized products. Recognizing that thermoplastics also were not accepted in the recycling stream at his facility, Adrian and his team decided to recycle their thermoplastics, which are used for radiotherapy patient immobilization. Since this project commenced in 2017, an estimated 700 kg of plastic has been diverted from the waste stream. At least two other regional cancer centres have followed Surrey's lead and are also recycling their thermoplastics.

Table of Contents

Executive Summary

Our Story

This Is Who We Are.

**We're Finding
Solutions: Together.**

**Writing the Story We Want,
Now and in the Future**

- Future actions
- Everyone's story
looks a little different

Downloads

**Provincial Health Services
Authority CNAR ↕**

**Provincial Health Services
Authority Dashboard ↕**

**Lower Mainland Health
Authorities Dashboard ↕**

5.0

Writing the Story We Want, Now and in the Future

Environmental sustainability
is everyone's story.

5.1 Future actions

As demonstrated by the success stories outlined in the previous section, we can see how staff engagement and actions are already leading to meaningful change in the workplace. Likewise, as the following GreenCare initiatives are put into place, they will lead to more success in our overall story of environmental sustainability.

- **Energy Management**

- Conducting lighting audits to quantify LED retrofit benefits
- Ensuring that net zero energy/emissions analysis is included at the concept phase for all major redevelopment projects
- Building key partnerships with the Facilities Project and Planning teams to ensure that energy/GHG performance and life cycle analysis are high priorities in new construction projects

- **Climate Resilience & Adaptation**

- Developing a Climate Resilience & Adaptation program webpage
- 2nd Annual Facilities, Maintenance and Operations Extreme Events Survey

- **Greenhouse Gas Emissions Management**

- Expanding the Thermal Gradient Header at Oak Street campus
- Building on key partnerships with operations staff to continue to identify and reduce energy/GHG reduction opportunities

- **Water Management**

- Rolling out the Water Management program

- **Workplace Leadership**

- GreenCare Community website refresh and relaunch

- **Zero Waste & Toxicity**

- Cafeteria waste diversion projects at Children's and Womens' Hospital and B.C. Cancer Agency - Vancouver
- Health authority-wide vinyl banner upcycling project



- Future actions
- Everyone's story
looks a little different



5.2 Everyone's story looks a little different.

Thank you for your ongoing support.

From the success stories in Provincial Health Services Authority to the challenges still faced, it's clear: **environmental sustainability is everyone's story**. If we are to overcome the impacts of the new climate reality, ensure that we are making responsible choices for our environment, and continue to offer our staff, volunteers, and patients the very best

quality of life possible, **together we must all take a leading role in transforming health care through our decision making**. To find out more about what you can do to support and advance environmental sustainability at Provincial Health Services Authority, please contact: greencare@phsa.ca