



Healthy people  
Healthy planet

Lower Mainland Facilities Management  
Energy & Environmental Sustainability

## Public Sector Climate Action Leadership Symposium

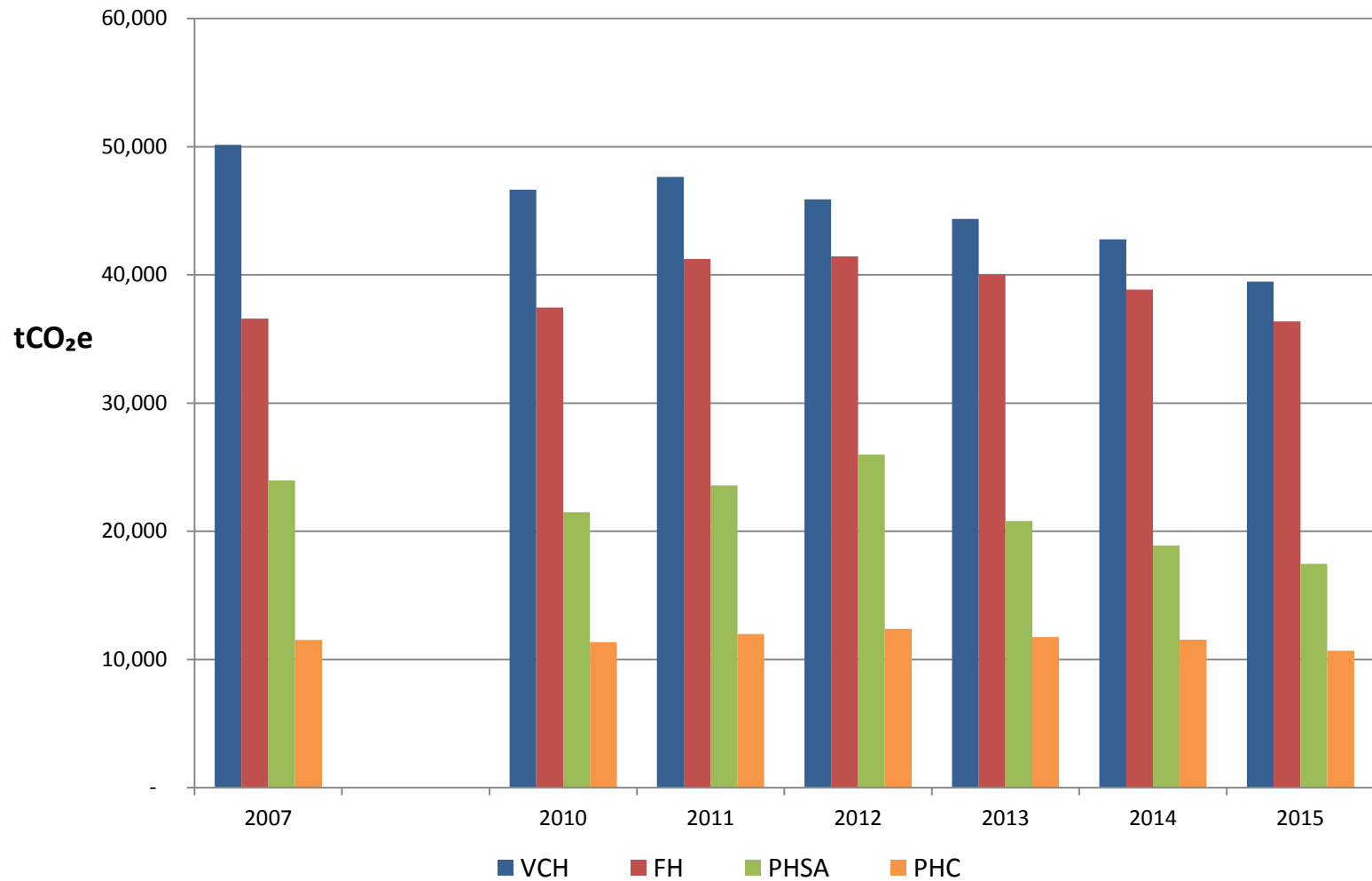
## Key Factors in Achieving Emissions Reduction

November 21, 2016

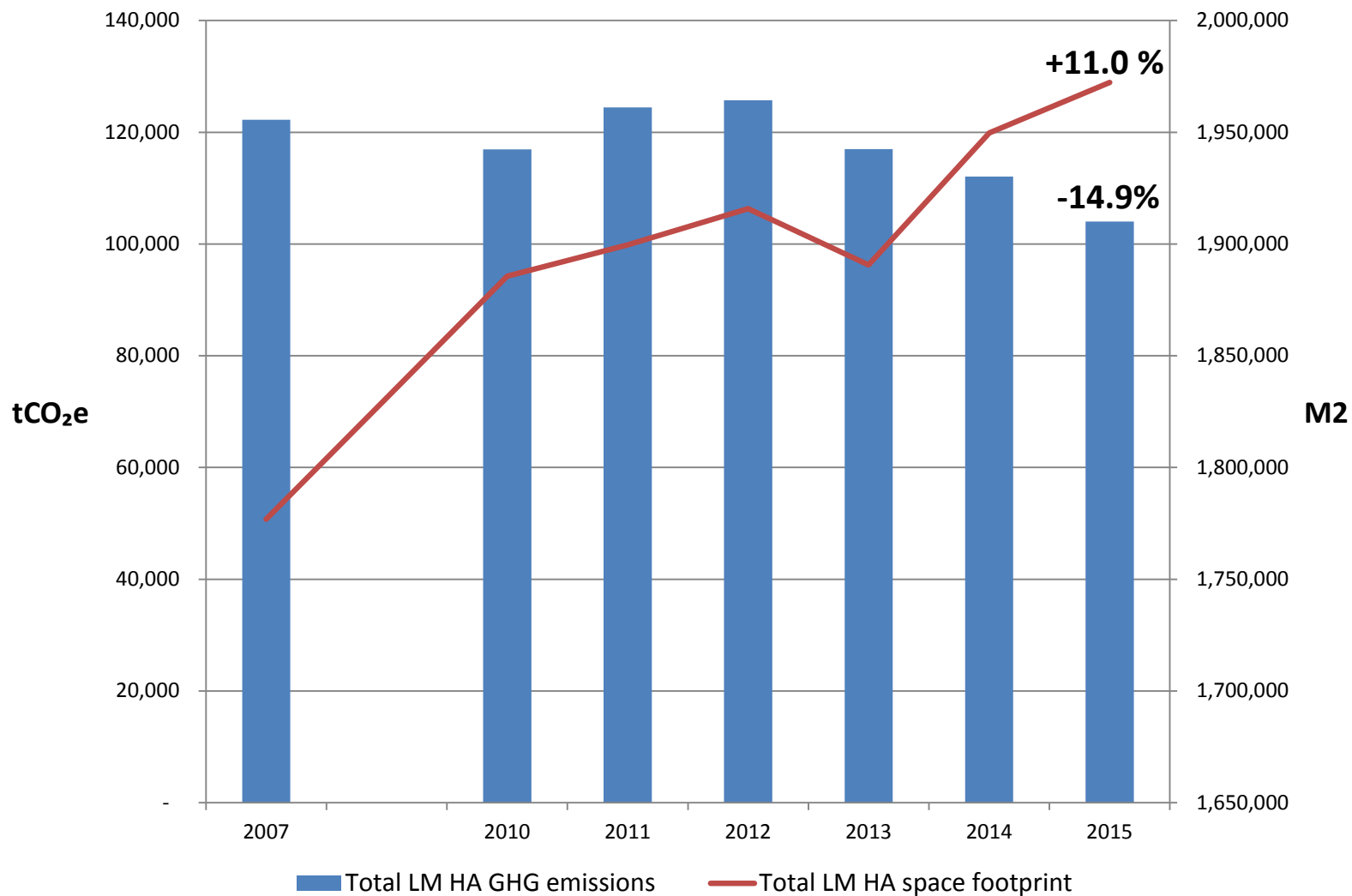
# GHG Emissions Reduction in the Lower Mainland Health Authorities

- Over 75% of BC's population
- 5 Largest Hospitals in the province
- More than 400 buildings and over 20 million sq. ft.
- Some of the largest energy plants and District Energy Systems (DES) in BC
- \$30M annual expenditure in electricity
- \$15M annual expenditure in natural gas and steam
- \$ 3M carbon offsets and \$2.5M carbon tax per year

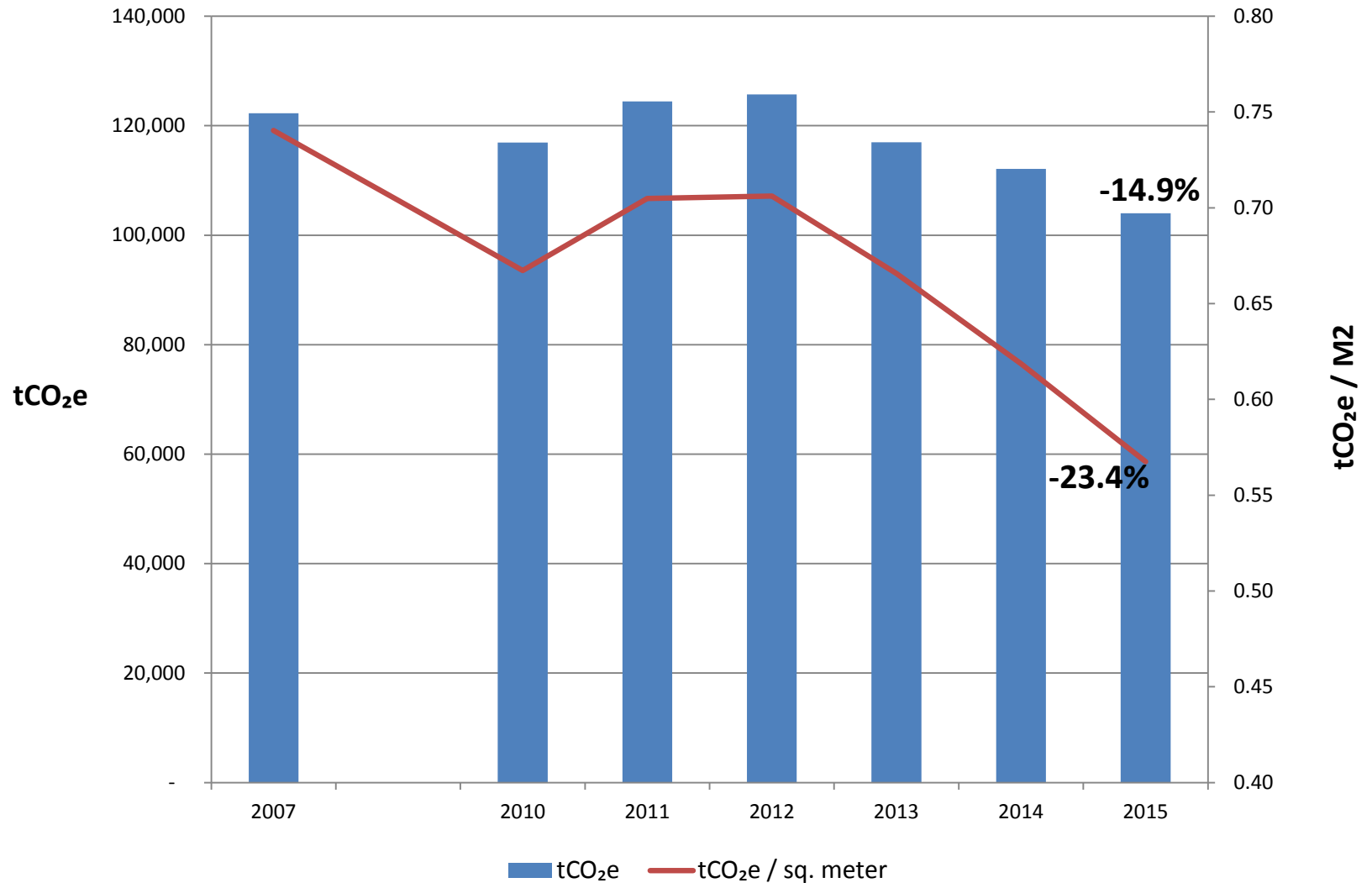
# LM Health Authorities GHG Emissions



# GHG Emissions vs. Space Footprint



# GHG Emissions and Intensity per M2



# 1. Leadership Commitment

## Policy

*“The LMHAs will act as leaders with respect to environmental stewardship while engaging the healthcare community in a collaborative approach towards sustainability.”*

*Approved Sep.2010*

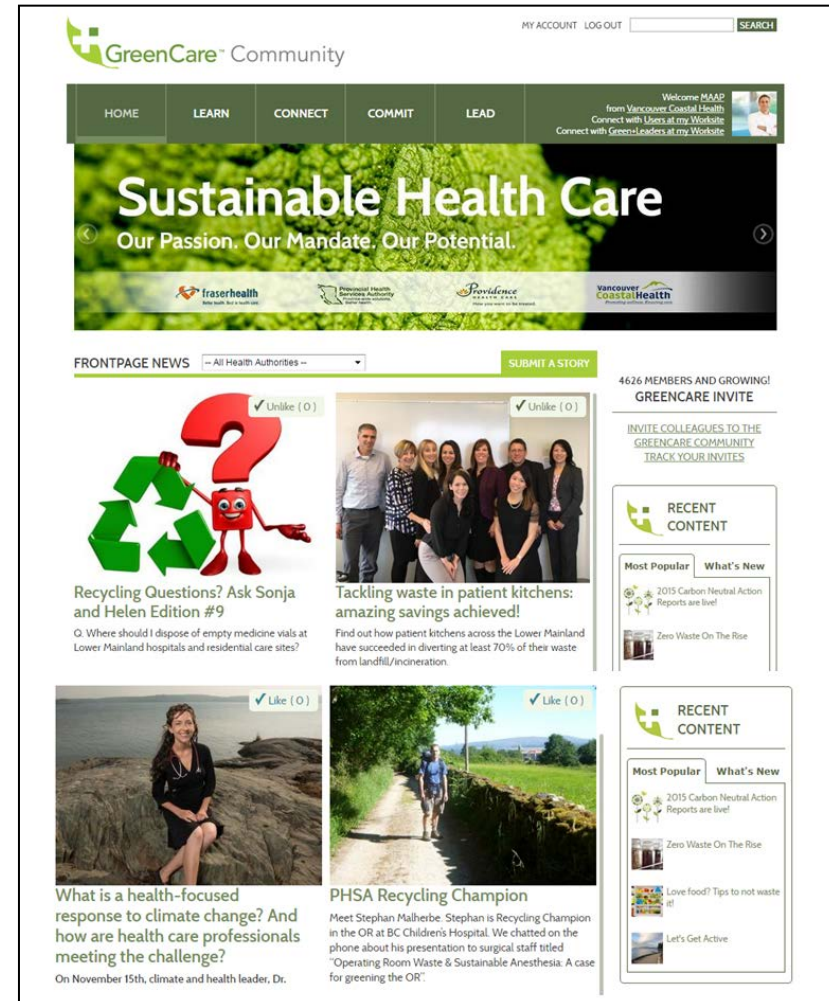
Environmental Sustainability Advisory Committee

Senior Executive Champions

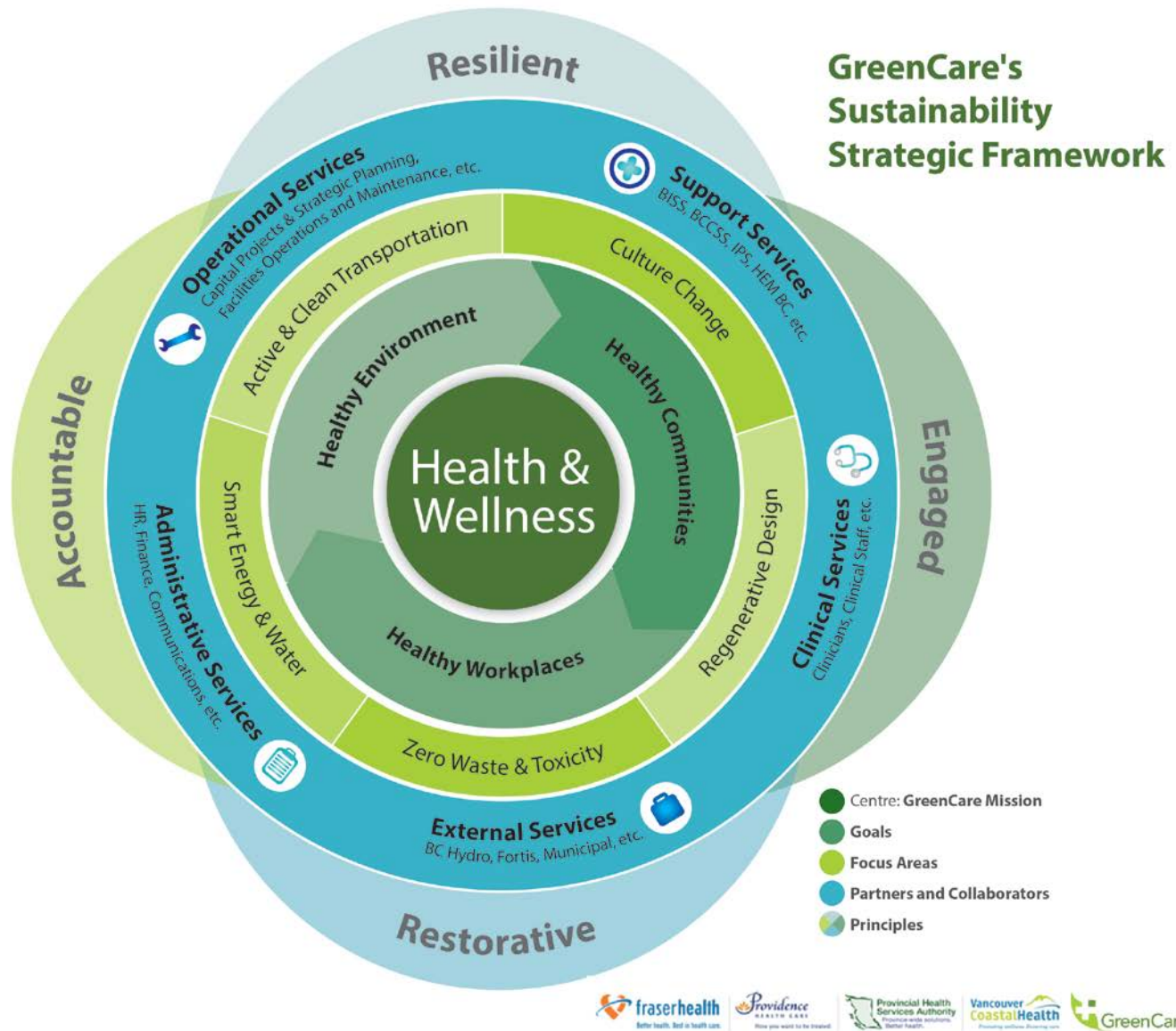
## 2. Holistic Approach to Sustainability

### GreenCare Mission

*“GreenCare engages internal and external partners in the health care community through collaboration, innovation, and transparency to create sustainable and environmentally-responsible health care practices and systems leading to population health and wellness”*

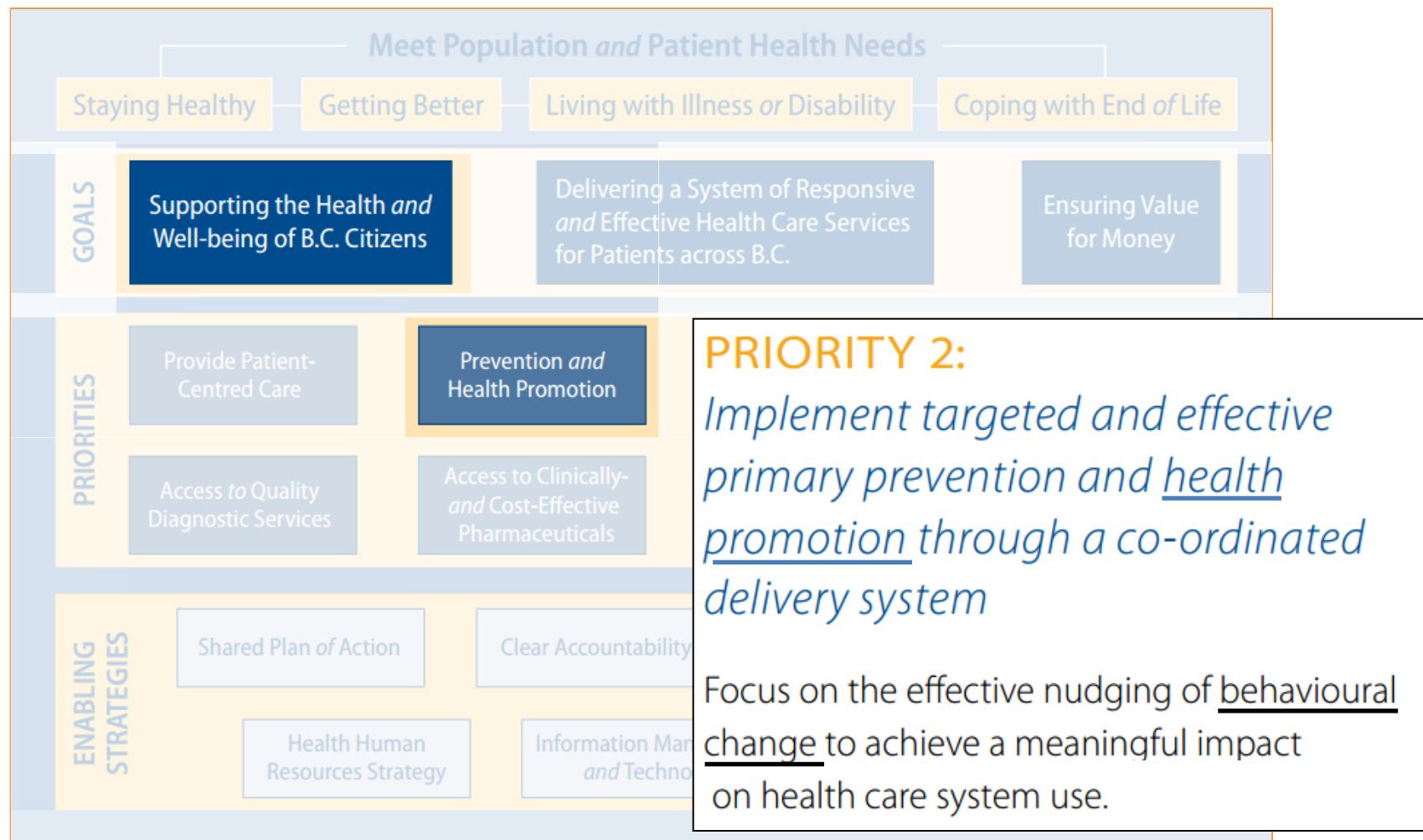


### 3. Strategic Approach





## 4. Alignment with Core Business



<http://www.health.gov.bc.ca/library/publications/year/2014/Setting-priorities-BC-Health-Feb14.pdf>

Ministry of Health: Setting priorities for the BC health system

## 4. Alignment with Core Business

*“The environmental impact from healthcare facilities, operations and services influences the health of the populations and patients they are meant to serve.”*

Adapted from the World Health Organization & Healthcare Without Harm

[http://www.who.int/globalchange/publications/climatefootprint\\_report.pdf](http://www.who.int/globalchange/publications/climatefootprint_report.pdf)

# Focus Area: Smart Energy and Water

**Goal:** Minimize the health impacts linked to healthcare facilities and operations on the populations that we serve through the implementation of energy and water management strategies.

## Targets:

- Reduce Site BEPI by 15% compared to the 2007 baseline by 2020
- Aim to meet GHG emission reduction by 33% compared to the 2007 baseline by 2020 (MoE GGRTA 2007)
- To collaborate and create an energy performance target for major renovation and new construction projects as part of the our Owner Project Requirements

### Operational Outcome

Utility & Maintenance Expenses ↓

Skilled Resources & Retention ↑

Revenue Generation from Incentives ↑

Interdepartmental Collaboration ↑

### Environmental Outcome

Local & Regional GHG Emissions ↓

Climate Change Impact ↓

Resource Depletion ↓

### Health Outcome

Cardiovascular Disease ↓

Asthma Exacerbation ↓

Premature Death ↓

### Metric

**Building Energy Performance Index (BEPI)**

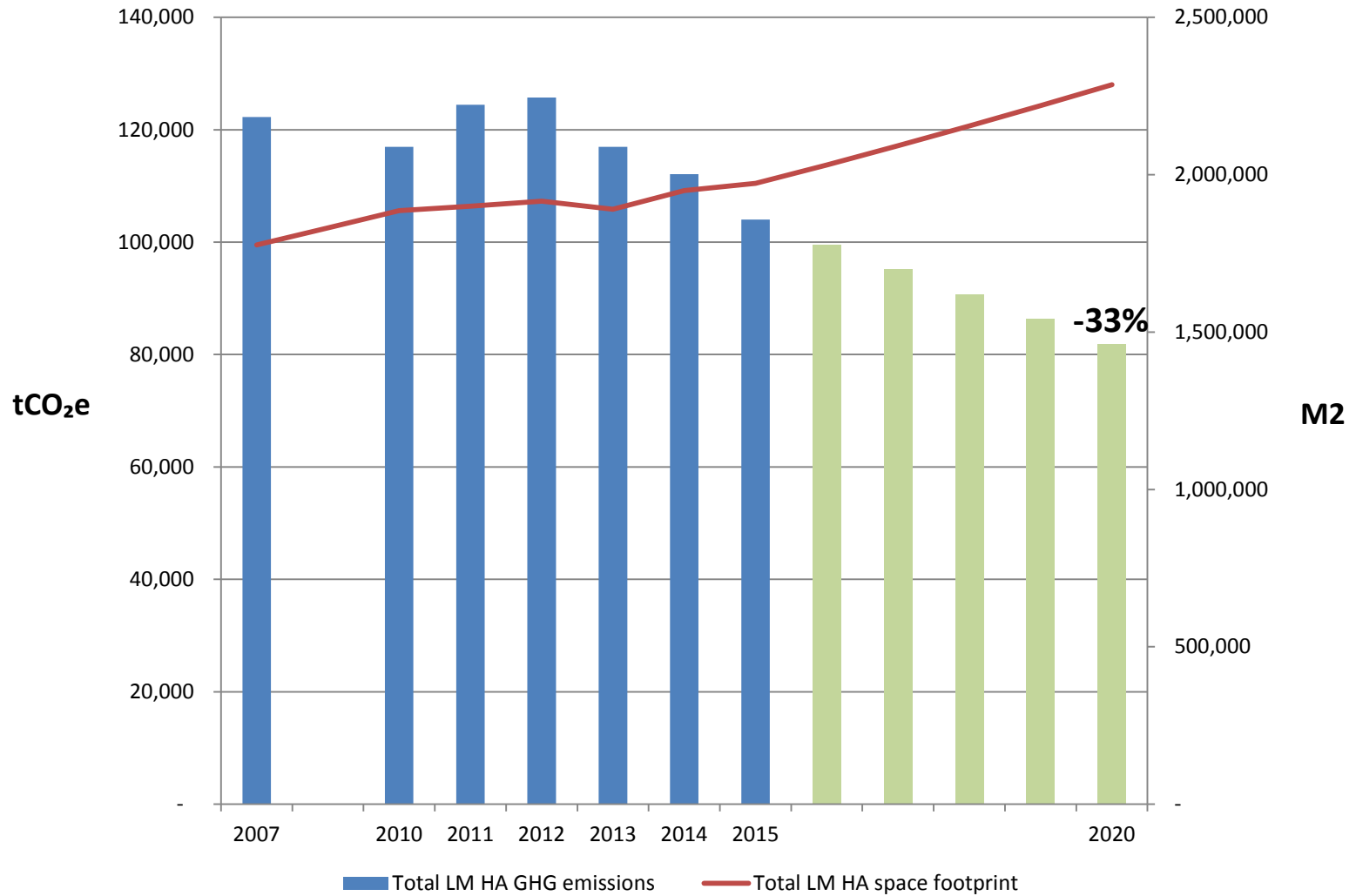
1. Energy Use Intensity: ekwh/yr/m2
2. Energy Cost Intensity: \$/yr/m2
3. Energy Use per Patient: ekWh/yr/patient case

**Building Water Performance Index (BEPI)**

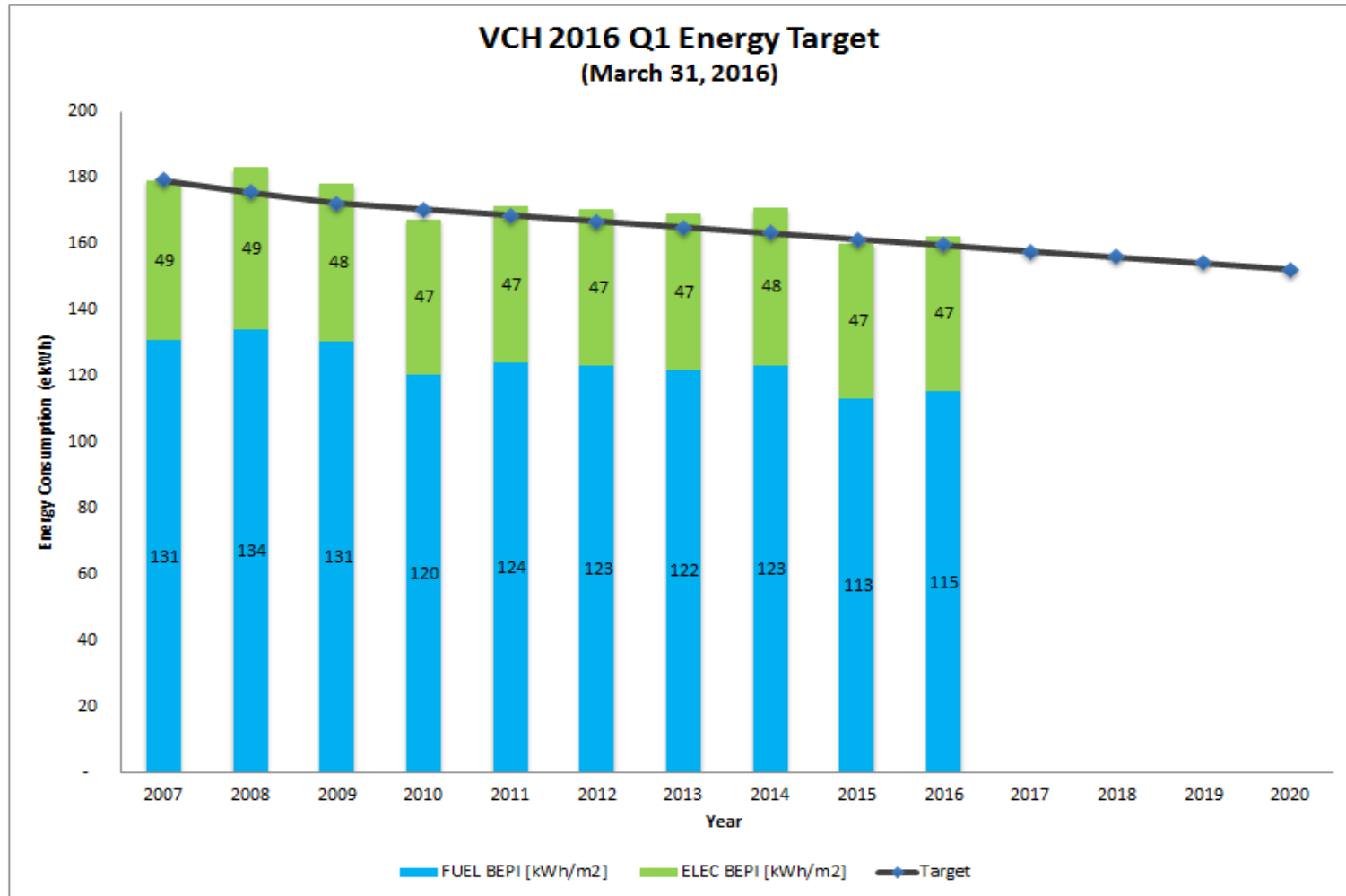
1. Water Use Intensity: ekwh/yr/m2
2. Water Cost Intensity: \$/yr/m2
3. Water Use per Patient: ekWh/yr/patient case

**Building Carbon Emissions Index (BCEI):** CO2e/yr/m2

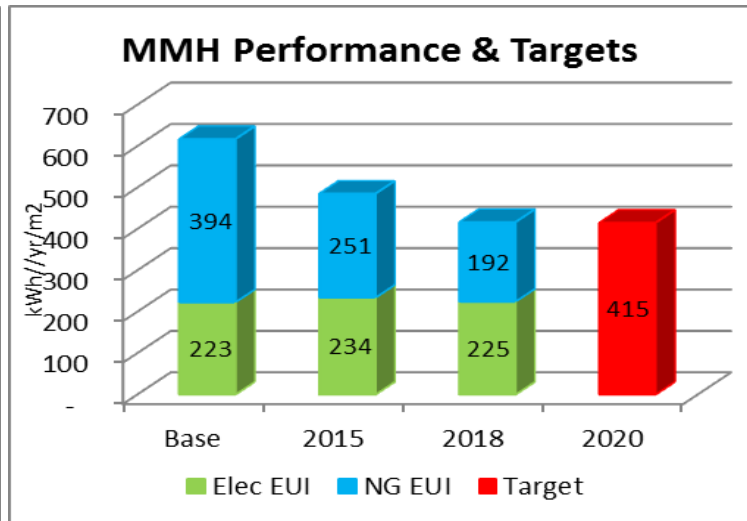
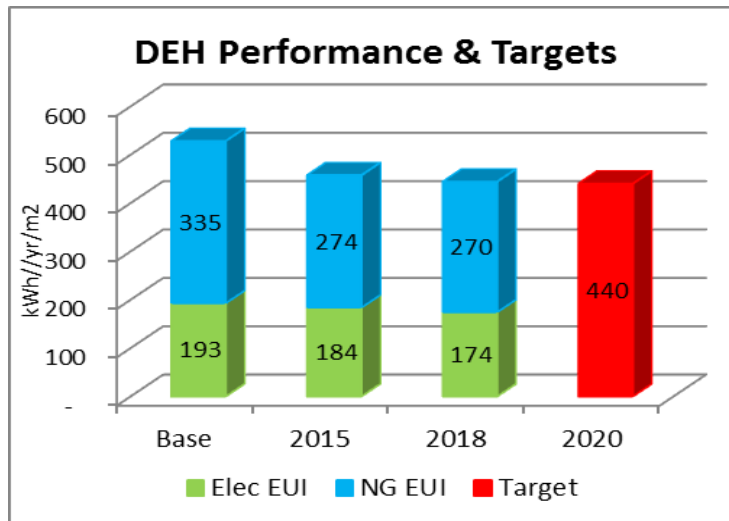
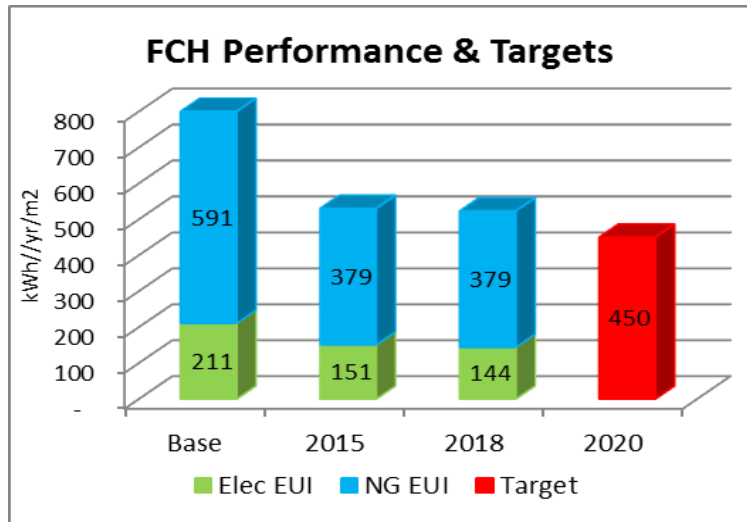
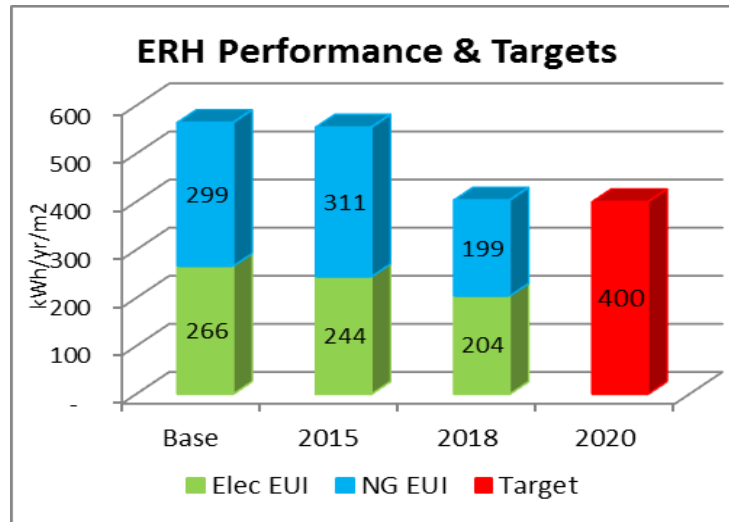
## 5. Setting Goals and Targets



# Organization Wide Targets



# Site Specific Targets



## 6. Funding and Preparation

- Carbon Neutral Capital Program (CNCP)
- External Funding / Incentives
  - BC Hydro
  - Fortis BC
- Health Authorities Operational Budgets
- Minor Capital Allocation
- Green Revolving Funds
- Project funnel
- Leverage major capital projects opportunities
- New technologies
- Training and best practices

## 7. Communication, Reporting and Accountability



**Transforming  
Health Care for a  
Thriving Environment**




**2014 ENVIRONMENTAL  
ACCOUNTABILITY REPORT**





# Carbon Neutral Action Report

**2015 Carbon Neutral Action Report**  
Fraser Health Authority



**Executive Summary: Fraser Health, CNAR 2015**  
Michael Marchbank, President and Chief Executive Officer

It is my pleasure to present Fraser Health's 2015 Carbon Neutral Action Report. This marks the sixth consecutive year we have achieved carbon neutrality, as part of the provincial public sector commitment to achieve net-zero emissions.

Fraser Health's 2015 carbon footprint represented 36,384 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) – a 6.4 per cent decrease from 2014 and a 0.6 per cent decrease since 2007. Health care is an energy-intensive industry and one that continues to grow, with populations expanding and aging. In addition, our facilities and staffing portfolios have expanded significantly since 2007 – by 26 per cent and 23 per cent – respectively. Despite these pressures, Fraser Health's tCO<sub>2</sub>e per square meter of facility space has decreased by 21 per cent, a notable achievement.



In 2013, retrofits to 19 of our facilities were completed, which will result in significant energy savings of 4.4 eGWh (15,663 GJ) and a GHG savings of 643 tCO<sub>2</sub>e. Several energy and greenhouse gas emission reduction projects were funded by the Carbon Neutral Capital Program (CNCPP) including those at Chilliwack General, Delta, Eagle Ridge and Peace Arch Hospitals. Over \$1 million was used from this fund to enable the majority of the emission savings stated above.

A \$250,000 Green Revolving Fund was established this year, using internal and seed funding from BC Hydro to enable a revolving funding mechanism for future electricity reduction projects; and we continued to expand our engagement strategy with the GreenLeader Program, encouraging everyone to realize their role in supporting environmental stewardship.

To counteract emissions we were unable to reduce, we purchased carbon offsets from the Ministry of Environment at a total cost of \$955,801.

In the year ahead, innovation and commitment will help us move our refreshed GreenCare environmental sustainability strategic framework forward, allowing us to better align energy management with population health and wellness. As well, we will continue implementing greenhouse gas emission and energy reduction projects and ensuring new buildings adopt energy efficient design principles.

Thank you to everyone who worked hard to reduce Fraser Health's carbon and environmental footprint. We know every individual can make a difference and by working together we are able to provide both quality care and a better health care environment for our patients and our communities.

**2015 Carbon Neutral Action Report**  
Providence Health Care



**Executive Summary: Providence Health Care, CNAR 2015**  
Dianna Doyle, President & Chief Executive Officer

It gives me great pleasure to present Providence Health Care's (PHC) sixth annual Carbon Neutral Action Report (CNAR) for 2015.

For six consecutive years, PHC has been proud to be carbon neutral. As an organization driven by innovation and social justice, we believe that our role as health care providers goes beyond caring for individuals and to caring for the environment, too.

With over one hundred years of service to the local community, we consider our role as stewards to be one of our most deeply held responsibilities. For us, that includes taking personal responsibility for the carbon footprint produced by our operations and facilities.

In 2015, PHC had a carbon footprint of 10,677 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e), which was offset at a cost at a total cost of \$280,271. This represents a 7.4 percent decrease from the 2007 PHC carbon footprint. Compared to 2010, PHC's carbon offset cost has reduced by \$47,973.

In 2016, we will continue to improve our environmental performance through improved energy efficiency, coordinated efforts, and education. These projects have a positive impact; saving energy, decreasing air pollution, and ultimately adding to the health and wellness of facilities, workplaces and the communities we serve.




**2015 Carbon Neutral Action Report**  
Provincial Health Services Authority



**Executive Summary: Provincial Health Services Authority**  
Carl Roy, President & Chief Executive Officer

Over the years, Provincial Health Services Authority (PHSA) has dedicated more time and resources to raising environmental awareness amongst our staff, our patients and the communities we serve.

I am pleased to present the sixth annual Carbon Neutral Action Report (CNAR), which highlights PHSA's leadership in reducing our carbon footprint and linking health and wellness to environmental sustainability and accountability. At a time when many of us feel a growing concern for our planet's health, the changes we continue to make in our workplace have earned PHSA the designation of one of Canada's Greenest Employers, for the sixth year in a row!

In 2015, PHSA had a carbon footprint of 17,497 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e), which was offset at a total cost of \$458,335.00. This represents a 27 per cent decrease from the 2007 PHSA carbon footprint. Compared to 2010, PHSA's carbon offset costs has reduced by \$244,825. As well, PHSA completed several projects in 2015, with a total estimated savings of 166,206 kWh of electricity and 4 tCO<sub>2</sub>e. PHSA partially completed five other energy savings projects in 2015, with estimated savings once complete of 1.3 GWh of electricity, 17,796 GJ of gas, and 922 tCO<sub>2</sub>e.

Many of the energy projects that we list in this report would not have been possible without the coordinated efforts of PHSA staff working together, and in collaboration with external stakeholders. PHSA's Energy Management team worked closely with Facilities Maintenance and Operations (FMO) teams on projects that reduce emissions in PHSA buildings. These projects have positive impacts; saving energy, decreasing air pollution, and ultimately adding to the health and wellness of facilities, workplaces and the communities we serve.





**2015 Carbon Neutral Action Report**  
Vancouver Coastal Health Authority



**Executive Summary: Vancouver Coastal Health, CNAR 2015**  
Mary Ackenhusen, President and Chief Executive Officer

I am pleased to present Vancouver Coastal Health's 2015 Carbon Neutral Action Report. For the sixth consecutive year, Vancouver Coastal Health has achieved carbon neutrality, as part of the provincial public sector commitment to achieve net-zero emissions.

In 2015, Vancouver Coastal Health's carbon emissions footprint was 39,484 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) – a 7.7% decrease from 2014 and a 21% decrease in the carbon footprint since 2007. To counteract emissions we were unable to reduce otherwise, we purchased carbon offsets from the Ministry of Environment at a total cost of \$986,239.





In 2015, Vancouver Coastal Health continued its effort to further reduce our environmental impact by completing 18 energy savings projects for a total estimated savings of 2.63 GWh of electricity and 19,096 GJ of natural gas a reduction of 992 tCO<sub>2</sub>e of GHG. As well, VCH fully utilized the Carbon Neutral Capital Program (CNCPP), to fund several energy / GHG emission reduction projects at Powell River Hospital. CNCPP funds, combined with incentive funding were invested into an energy efficiency upgrade project, which resulted in 79 tCO<sub>2</sub>e emission savings.

High levels of staff engagement and coordinated efforts make Vancouver Coastal Health's energy reduction projects possible. The success story in this report highlights the value of a team orientated approach, celebrating the collaboration between VCH's Energy Management team, Powell River's Facilities Maintenance and Operations team, and external stakeholders. The results? A successful project with estimated annual savings of 16,106 kWh's of electricity; 1,518 GJ's of natural gas; \$20,202 in avoided energy and maintenance costs; and 79 tCO<sub>2</sub>e of greenhouse gas emissions. These reduced emissions and financial savings, ultimately add to the health of our buildings, benefit the wellbeing of the communities we serve, and would not have been possible without collaboration and engaged staff.

As 2015 progresses, I will continue to support the innovative and collaborative approach, which drives VCH's commitment to create sustainable health care.




# Environmental Accountability Report Scorecard

TOPIC	GOAL	TARGETS	STATUS	2014 PERFORMANCE
 <b>Culture of Stewardship</b>	Create a culture of sustainability stewardship (economic, social, environmental) in the workplace and promote active staff engagement.	Recruit, train and maintain a minimum of 150 Green+Leaders for each of the LMHOs by 2020.	▲	Active Green+Leaders: FH 83    PHC 10 PHSA 80    VCH 47    OTHER 11
		Increase the number of registered staff in the GreenCare Community by 500 per year.	▲	Registration Increase: FH +239    PHC +76    PHSA +258    VCH +222
		Train and maintain 75 new Recycling Champions per year.	▲	Champion Increase: FH +82    PHC 0    PHSA +39    VCH +5
 <b>Energy Conservation and Climate Neutral</b>	Achieve climate neutral operations through energy conservation and efficiency, low carbon supply, and the purchase of carbon offsets.	Reduce Energy Use Intensity (EUI) of the core sites by 12-15% by 2020 (relative to a 2007 baseline).	▲	FH -9.3%    PHC -0.7%    PHSA -2.5%    VCH -10.2%
		Reduce carbon emissions by 33% by 2020 (relative to a 2007 baseline).	▬	FH 6.2%    PHC 0.1%    PHSA -21.2%    VCH -13.7%
		Design all new construction projects to achieve a specific EUI target.	▲	EUI targets are included in all new projects.
 <b>Zero Waste</b>	Make recycling easy and accessible in working towards a Zero Waste health care system.	Achieve 50% waste diversion rate for acute and residential care sites in the Recycling Renewal Program (RRP) by 2014, and a 70% diversion rate by 2015.	▬	FH 41%    PHC 46%    PHSA 35%    VCH 40%
		Ensure 100% implementation of the RRP at all acute and residential care sites by 2016.	▲	FH 41%    PHC 100%    PHSA 100%    VCH 100%
		Launch a pilot program to review FMO construction waste recycling procedures, and gather metrics at 3 acute sites by 2016.	▲	Began pilot program at Vancouver General Hospital, Children's & Women's Health Centre of BC, and Ridge Meadows
		Eliminate 100% use of Styrofoam as service ware in patient and residential food services by 2015.	▲	FH 45%    PHC 100%    PHSA 100%    VCH 100%
 <b>Active Transportation</b>	Make walking, cycling, car pooling, and public transit the preferred transportation and commuting options for LMHO staff. Where applicable, make the shuttle service a preferred transportation between sites.	By 2020, ensure 15% of LMHO staff choose to WALK for their primary commute.	▲	FH 5.4%    PHC 13.3%    PHSA 11.3%    VCH 12.2%
		By 2020, ensure 6% of LMHO staff choose to CYCLE for their primary commute.	▲	FH 2.3%    PHC 8.4%    PHSA 8.4%    VCH 7.5%
		By 2020, ensure 17% of LMHO staff choose PUBLIC TRANSIT for their primary commute.	▲	FH 9.4%    PHC 29.3%    PHSA 21.4%    VCH 17.5%
		By 2020, ensure 17% of LMHO staff choose to RIDE-SHARE for their primary commute.	▲	FH 5.9%    PHC 8.0%    PHSA 10.2%    VCH 6.2%
 <b>Water Conservation and Restoration</b>	Reduce water consumption through conservation and reuse measures, and contribute to restoring the natural water cycle.	By 2020, achieve a 20% reduction in water intensity, using the Building Water Performance Index (baseline 2010).	▬	FH -12.7%    PHC -13.3%    PHSA -5.5%    VCH 0.1%
		By 2020, implement five new rainwater harvesting projects.	▼	FH 1    PHC 0    PHSA 0    VCH 0
		By 2020, implement one new grey water reuse project.	▼	Investigated opportunities for a grey water reuse project
 <b>Sustainable Supply Chain</b>	Leverage the purchasing power of the health care system to ensure the LMHOs become a Canadian leader in fostering healthy communities, workplaces and ecosystems.	In 2014 the GreenCare Team and Health Shared Services BC (HSSBC) will improve organizational efforts to achieve a sustainable supply chain.	▬	Conducted numerous sustainable supply chain projects



## 8. Recognizing and Celebrating



# Key Factors in Achieving Emissions Reduction

1. Leadership Commitment
2. Holistic Approach to Sustainability
3. Strategic Approach
4. Alignment with Core Business
5. Setting Goals and Targets
6. Funding and Preparation
7. Communication, Reporting and Accountability
8. Recognizing and Celebrating



Thank you

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