

ENVIRONMENTAL STEWARDSHIP: AN IMPLEMENTATION GUIDE FOR BOARDS, EXECUTIVE LEADERS, AND CLINICAL STAFF:

MEETING HOSPITAL
STANDARDS AND BEYOND



PURPOSE AND SCOPE

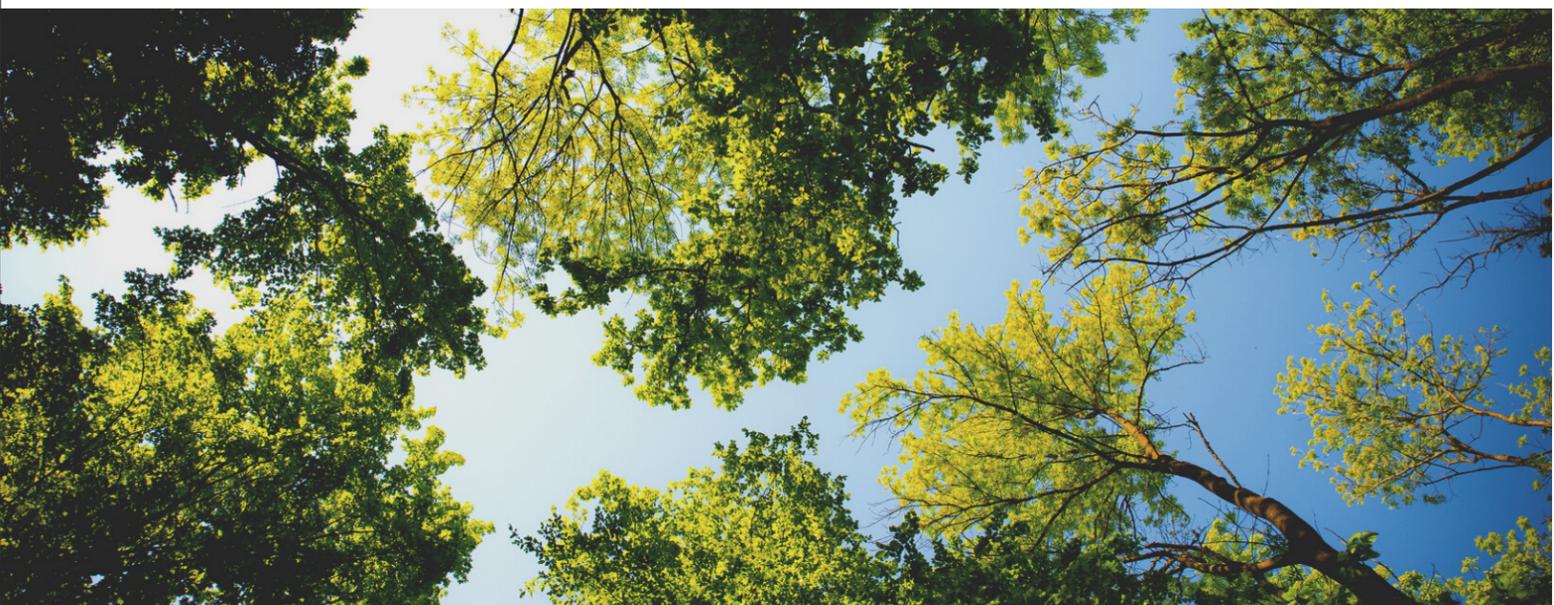
This guidebook provides an overview of some of the key steps and actions that senior leaders can initiate and support for their hospital to move towards a climate-resilient, carbon net-zero, and environmentally sustainable health system. Rather than a comprehensive overview, this document is intended to be a primer to help hospitals with their transition to a greener system: from those starting their journey to those looking for new ideas to implement within an already robust sustainable system.

In order to reach net-zero, hospitals will need to develop a culture of sustainability which combines top-down and bottom-up approaches. However, health care is facing the climate crisis while also dealing with a global pandemic! The increased clinical demands and significant staffing shortages we are experiencing now will delay the process of creating a culture of sustainability. This guidebook emphasizes high impact initiatives which can be started now - as we gradually create a new corporate culture.

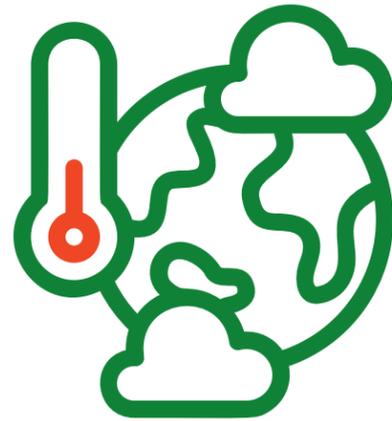


TABLE OF CONTENTS

- Health Care and the Climate Crisis 4**
- Rewards and Risks for Acting Now 5**
- How to Achieve Environmental Sustainability?**
 - A Roadmap to Environmental Stewardship 6*
 - Action Items 8*
- Adapting to Climate Change and Improving Resiliency.. 10**
- Next Steps:**
 - How can we develop a culture of environmental stewardship? 11*
- Glossary 12**
- Key Resources 13**
- Contributors 14**



HEALTH CARE AND THE CLIMATE CRISIS



WHY IS THIS IMPORTANT?

The global pandemic has taught us that we can focus the attention of the health care system on a clear purpose when there is a looming threat. Climate action is required from all sectors of the economy including health care. This effort is crucial in order to achieve the net-zero carbon emissions goal by 2050, which was established by the Canadian government. In addition, building climate resilience among health care institutions and their supply chains is urgently needed as they are already being impacted by a changing climate.

New accreditation standards for governing boards as well as federal, provincial and local regulations, are requiring senior leaders to consider environmental stewardship in their strategic plans. This will affect enterprise risk management plans, capital investment plans, procurement policies and practices, and budgeting. In the future, recruitment and retention of young professionals will depend on the alignment of organizational priorities and commitments to shared values of social and environmental justice.

Health care governing boards, senior executives, and clinical staff all play a key role that extends beyond the boundaries of their organizations. As highly respected leaders, their actions can positively influence staff, patients, visitors, suppliers, and entire communities. There is a high level of public contact and interaction with the health care system; therefore, the system itself should provide an exemplary commitment to environmental stewardship.

HEALTH CARE CONTRIBUTES 5% OF THE GREENHOUSE GAS (GHG) EMISSIONS IN CANADA, WHICH IS HIGHER THAN THE AIRLINE INDUSTRY.

The influence that health care can have in reducing emissions by others is significant.

HEALTH CARE SHOULD CARE ABOUT PEOPLE AND THE PLANET.

REWARDS AND RISKS FOR ACTING NOW

REWARDS



- Leadership in your local community
- Positive staff culture and engagement
- Decisions made now will lock you into your future net-zero pathways (ie. new boilers, PPE contracts)
- Secure access to medical product supply chain with a focus on reusables
- Increase in infrastructure resilience

ABILITY TO MEET NEW STANDARDS



- New accreditation standards for leadership (2021) and governing bodies (2022)
- New carbon reduction regulations
- An imperative to adapt to climate change (now) and build resilience (for the future)

FISCAL RISKS

- Carbon tax: 600% increase expected this decade
- Climate inaction can demoralize staff, leading to decreased efficiency

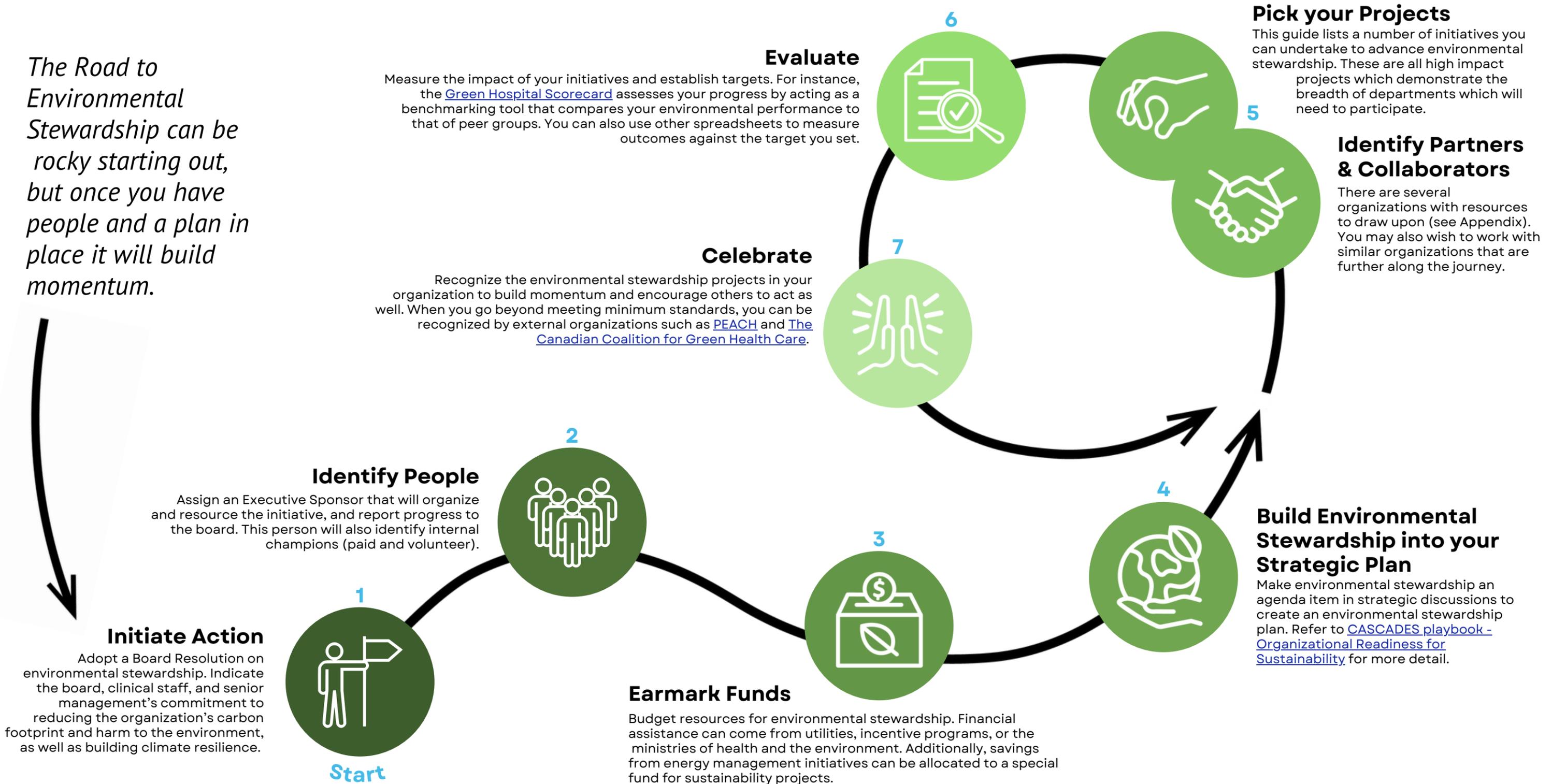


HEALTH SYSTEM RISKS

- Needing to respond to a climate emergency in:
 - Operational services
 - Health services

A ROADMAP TO ENVIRONMENTAL STEWARDSHIP

The Road to Environmental Stewardship can be rocky starting out, but once you have people and a plan in place it will build momentum.



ACTION ITEMS



LEADERSHIP

- Implementation of a Sustainability Strategy
- Appoint a leadership person for sustainability

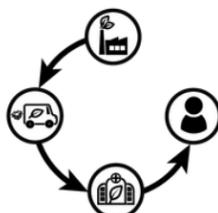
- Divest foundation funds from fossil fuels to low-carbon funds ●



EDUCATION

The [Choosing Wisely Canada](#) (CWC) program was developed to educate clinicians on minimizing unnecessary tests and investigations. Hospitals can be recognized for their efforts.

- Recognized by CWC as a "Using Blood Wisely Hospital" ●
- Recognized by CWC as a "Using Labs Wisely Hospital" ●
- Recognized by CWC as a "CWC Hospital" ●



SUPPLY CHAIN

- Procurement contracts contain weighting for sustainability of 10% or higher 💰
The supply chain represents over 65% of health care's carbon footprint. Hospitals work with procurement organizations that award contracts to suppliers using a scoring system. If 'sustainability' is part of the scoring, suppliers are motivated to develop sustainable products, compatible with a circular economy.

- Facility uses reusable gowns and linens ●
Reusable gowns and linens are as safe as single-use items. Where reusable PPE infrastructure is available there can be significant cost savings.
- Hospital has a reusable sharps container program, or equivalent 💰
Traditional sharps (needles, scalpels, etc) are disposed of in 'sharps' containers which are autoclaved or, in some cases, incinerated which generates significant GHGs and other pollutants. The reusable containers can be emptied and sterilized by the company, and then reused in the hospital, resulting in significant financial and environmental savings.
- Operating room (OR) reduces waste by having pick lists for each surgeon ●
Meant to optimize OR efficiency, operative pick lists, or surgeon's preference cards, indicate which surgical instruments need to be opened for a given procedure. Studies show that up to 87% of opened items are not used; thus, streamlining lists reduces waste of instruments and instrument wrapping material, reduces emissions required to reprocess and transport instruments, and leads to overall cost reductions.



DRUGS AND DEVICES

- Pharmacy has a sustainable prescribing strategy ●
Sustainable prescribing is done to decrease unnecessary medications, errors, interactions, and side effects. It is also important because pharmaceutical production and disposal release a significant amount of GHGs.

This section contains some of the **action items** that have the greatest impact in reducing the hospital's carbon footprint. This list also includes the **expected cost** to help choose between items. Some of these items will be a real challenge!

CAPITAL COST

- Savings, or no cost
- 💰 Small cost
- 💰💰 Medium cost
- 💰💰💰 Large cost

- Desflurane is minimized to less than 5% of OR gases ●
Anesthetic gases are released directly into the atmosphere following their use, and exert considerable greenhouse effects (higher than CO2). From these, desflurane has the worst GHG burden in comparison to other gases (2200 times more than CO2).



BUILDINGS AND ENERGY

- Heating, Ventilation and Air Conditioning (HVAC) Systems are energy efficient 💰💰
Older generation boilers and chillers produce most of a facility's GHGs. Upgrading to energy-efficient HVAC systems, using ground, air or water sources heat pumps, using wind or solar to generate electricity can further reduce GHGs.
- Over 90% of the facility has been converted to LED lighting 💰💰
Replacing old light fixtures with modern energy-efficient LED fixtures can significantly reduce energy expenditures.
- OR ventilation is set back to 8 to 10 cycles per hour, or lower, overnight 💰
Other countries (such as the UK) do not run their OR ventilation at full settings during off-hours, whereas in Canada hospitals may not 'set-back' their ventilation settings because of safety concerns regarding infectious diseases. However, there is no evidence that this is an unsafe practice.
- Facility, or proposed new build, is [LEED Gold standard](#) or higher 💰💰
New builds operate with minimal GHG emissions.
- Facility has a dedicated energy manager or equivalent consultation service 💰
A dedicated energy manager is hired to oversee and optimize all aspects of a hospital's energy use, and coordinate programs through the hospital.



FOOD

- Plant-based food options to patients are increased by 25% 💰
GHG reductions are associated with providing a more plant-based diet and decreasing the quantity of meat products offered to patients.
- Hospital uses a composter for food waste 💰
An aerating composter, whether on-site or as part of municipal waste management system, decreases the amount of GHGs released by food waste.



TRANSPORTATION

- Facility has a secure area to store bikes, or other accommodations that encourage bike riding 💰
Installation of bike stations (ranging in size and cost) can encourage employees to bike to work by providing a safe location to store bikes.
- Min. 2% of parking spaces at the facility are dedicated to carpooling or EV charging 💰
Car travel by staff, patients and visitors is a significant contributor to GHG emissions within health care. Therefore, encouraging carpooling can decrease environmental impact.

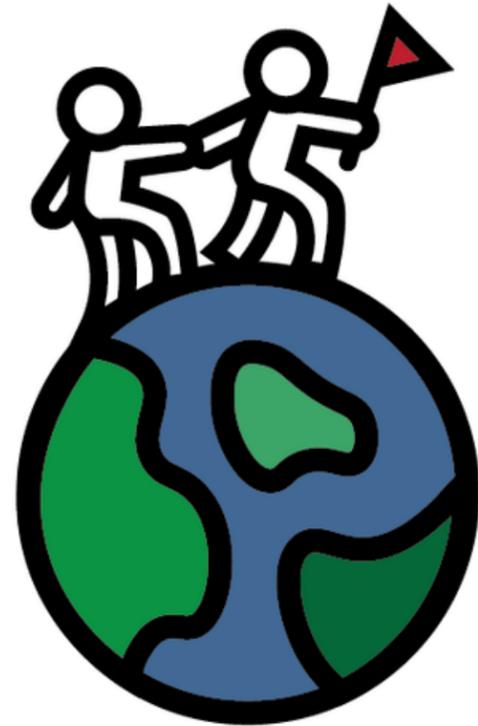


NATURE-BASED SOLUTIONS

- The facility has 25% green cover including green roof, food gardens, tree canopy, pollinator gardens and natural grass (except lawns) 💰
Plants absorb CO2 and reduce heat island effect. They provide beauty and evidence suggests plants lead to improved patient outcomes.

ADAPTING TO CLIMATE CHANGE AND IMPROVING RESILIENCY

Regardless of how much we are able to limit our emissions, we will be impacted by climate change in the near and long-term future. Organizations should consider facility resiliency assessments as part of their enterprise risk management program.



GEOGRAPHIC LOCATION ASSESSMENT

Each health care facility will face a unique set of geographic challenges (e.g. areas prone to flooding, tornadoes, hurricanes, drought). A geographic location assessment can help identify these risks and plan to respond to possible mass disasters, as well as the critical health issues that their respective patient populations will suffer.

RESILIENCY AND VULNERABILITY ASSESSMENT

A resiliency assessment of the organization's operations identifies its readiness to respond to climate-related events like extreme weather. Infrastructure vulnerability assessments identify key infrastructure needs to prepare for climate-related events. This will allow organizations to improve institutional preparedness.

GENERAL CONSIDERATIONS

- Follow the World Health Organization strategy to develop climate-resilient hospitals and health authorities in conjunction with the local governing body
- Work with community partners to identify key patient populations which your facility should be prepared to care for
- Provide health care workforce training:
 - Team-based approach, including identified senior lead
 - Review and practice mass casualty and weather event strategies
- Board members to address climate change using a risk management approach
 - Allocate funds based on assessments
 - Prioritize actions
- Identify potential barriers to continual service delivery
- Review supply chain, and ensure stock of critical supplies

NEXT STEPS

When considering the action items in this guidebook, think about:

- *What does our organization need in order to address this action item?*
- *Who do we need to work with both inside our organization and outside to make it happen?*
- *What impact can we expect to have on patients, staff, our community and our bottom line?*
- *How can we encourage learning, creativity and innovation?*

HOW CAN WE DEVELOP A CULTURE OF SUSTAINABILITY?

In addition to creating a strategy and leadership roles, an organization needs to develop a culture of environmental stewardship in order to get to net zero in all aspects of their operation. This may take years. Engagement of frontline staff and leaders through education, peer support and communication can be a call to action in the short term. Setting the tone by adopting a net-zero strategy to work towards, establishing targets, measuring results, and engaging staff to lead projects can affirm that environmental stewardship really matters. Shifting and sustaining this kind of change must be iterative (ongoing) and bi-directional (top-down and bottom-up).



GLOSSARY

Accreditation Standards - Accreditation Canada surveys hospitals to rate them on the extent to which they meet national standards for quality and hospital operations. New Standards regarding environmental stewardship were adopted for leadership in 2021 and for governing bodies in 2022.

Circular Economy - A systematic approach to economic development designed to benefit business, society and the environment. It moves beyond recycling to keeping products in use, eliminating waste streams and regenerating natural systems.

Climate Adaptation- Measures which are taken to protect a community or an ecosystem from the impacts of climate change.

Climate Mitigation- Measures which are taken to decrease or prevent the emission of heat-trapping greenhouse gases into the atmosphere.

Divesting Foundation Funds - Most hospitals have millions invested in their foundations, thus, by moving money from standard portfolios to low-carbon portfolios, significant greenhouse gases are saved.

Green Hospital Scorecard - The annual benchmarking survey of environmental performance carried out by the [Canadian Coalition for Green Health Care](#) provides both comparative and retrospective information for participants.

Greenhouse Gas (GHG) Emissions - GHGs are made up of carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) and fluorinated greenhouse gases (F-GHGs).

HVAC Systems - Heating, Ventilation and Air Conditioning (HVAC) systems that generate most of hospitals' GHG emissions.

Nature-based solutions- Implementing sustainable designs and natural features into the built environment to promote adaptation and resilience. These solutions would include natural grasses, pollinator gardens, rain gardens, trees and green roofs.

Net-zero - Achieving a balance between the greenhouse gas emissions put into the atmosphere and those taken out. CO₂ emissions make up over 80% of GHGs and can be broken down into Scope 1 direct emissions (i.e. heating and cooling), Scope 2 indirect emissions (i.e. purchased from utilities), and Scope 3 emissions generated from the operations of the company (i.e. supply chain, travel). In order to prevent the worst climate damages, global net human-caused emissions of carbon dioxide (CO₂) need to fall by about 45 percent from 2010 levels by 2030, reaching net-zero around 2050.

Sustainable Prescribing - This involves optimizing medications for patients, typically resulting in less medications prescribed. Also, in some cases, prescribers can switch from one medication to another one which produces less GHGs. For example, switching inhalers.

Sustainable Procurement - Building environmental sustainability factors into the rating system for the acquisition through purchase or lease of real property, goods or other products, works or services.

ORGANIZATIONS WITH KEY RESOURCES

LEADERSHIP

- **Leadership strategy** - <https://cascadescanada.ca/resources/all-topics/organizational-readiness/organizational-readiness-playbook/>
- **Divesting from fossil fuels, investing in green energy** - <https://www.shiftaction.ca>

EDUCATION

- **Choosing Wisely Canada** - <https://choosingwiselycanada.org/hospitals/>
- **Calculating your footprint** - <https://healthcareclimateaction.org/checkup>

SUPPLY CHAIN

- **Procurement contracts** - <https://sustainabilityadvantage.com/sp/case/>
- **Reusable gowns** - <https://journals.sagepub.com/doi/full/10.1177/01410768211001583>
- **Reusable items & OR pick lists** - <https://sustainablehealthcare.org.uk/what-we-do/green-surgery-challenge>

BUILDINGS AND ENERGY

- **OR ventilation setbacks** - <https://www.enerlife.com/wp-content/uploads/2017/06/Enerlife-OR-Ventilation-Best-Practices-Guide-April-2017.pdf>
- **New buildings** - <https://www.cagbc.org> (see 'zero-carbon')
- **Energy manager, heating systems, and LED lights** - <https://practicegreenhealth.org/topics/energy/energy>

DRUGS AND DEVICES

- **Deprescribing strategy** - <https://www.deprescribingnetwork.ca/>
- **Anesthetic gases** - <https://www.peachhealthontario.com/drugs-and-devices>

FOOD

- **Plant forward diets** - <https://www.nourishleadership.ca/sustainable-menus>
- **Composting** - <https://greenhealthcare.ca/wp-content/uploads/2017/07/CCGHC-Organic-Waste-Case-Study-June17-2013-FINAL.pdf>

TRANSPORT

- **Active Transport** - <https://cape.ca/resource/active-travel-toolkit-en/>
- **EV chargers** - <https://chasecanada.org/wp-content/uploads/2021/03/ZEV-BACKGROUNDER-ENG.pdf>

NATURAL SYSTEMS

- **Green space** - <https://bcgreencare.ca/wp-content/uploads/2021/10/Green-Design-for-Climate-Resilience-and-Well-being.pdf>

RESILIENCY

- **Health care Facility Resiliency Toolkit** - <https://greenhealthcare.ca/climate-change-resiliency-toolkit/>

MORE KEY GREEN ORGANIZATIONS

- <https://synergiesanteenvironnement.org>
- <https://nordicshc.org/>

CONTRIBUTORS

Neil Ritchie, Myles Sergeant, Curtis Lavoie, Kim-Chi Tran, Richard Webster, Sujane Kandasamy, Luz Paczka Giorgi, and Linda Varangu.

This project was conceptualized by NR and MS.

NR, MS, CL, KT & RW contributed to background research, discussions, and reaching consensus on presented information.

NR, MS, CL, KT, SK, LG, & LV wrote and edited the content.

LG designed the guidebook with input from SK.

All listed authors agree on the content presented in the final product.

THIS IS A LIVING DOCUMENT WHICH WILL BE REVISED AS THIS FIELD EVOLVES. WE WELCOME YOUR COMMENTS AND SUGGESTIONS.

SUPPORTED BY:



**The Canadian Coalition
for Green Health Care**

**Coalition canadienne pour
un système de santé écologique**