

Health Capital Policy Manual

Policy Name: Environmental Sustainability and LEED Gold Certification	
Chapter: 11	Effective Date: February 22, 2021

1. Objective

To support the health system's capacity to protect and improve population health by ensuring environmental sustainability measures are incorporated in health capital projects.

2. Scope

This policy applies to health authorities when acquiring, designing, building, procuring and using health capital assets.

3. Context

BC health authorities are committed to environmental sustainability to achieve the government's mandate as well as to benefit staff, patients and communities through improved environmental practices.

Environmental Sustainability

Environmental sustainability implies meeting the needs of the present without compromising the ability of future generations to meet their needs.

Due to its size, processes and 24/7 operations that require significant resource consumption, health care is a major emitter of environmental pollutants that adversely impact health. Impacts are derived from energy and water use, material waste, chemicals and transportation either from the manufacturing and procurement of building materials, furnishings and equipment or through the use and disposal of health care goods and services.

At the same time, health care assets, especially facilities, are necessary to protect and improve the health of communities in an unstable and changing climate. Therefore, health care facilities should be environmentally sustainable and minimize negative impacts on the environment by optimizing the use of resources and minimizing the release of waste into the environment. This will also provide occupants with opportunities to connect with nature and regain or improve health and well-being.

LEED Gold Certification

In 2008,¹ BC committed that all new public sector buildings will be constructed to LEED Gold or equivalent standards. There are four possible levels of LEED certification (certified, silver, gold and platinum).

LEED certification provides independent, third-party verification that facilities are designed and built using strategies aimed at achieving high performance in key areas of human and environmental health.

LEED is a rating system that seeks to optimize the use of natural resources, promote regenerative and restorative strategies, maximize the positive and minimize the negative environmental and human health consequences of the construction industry and provide high-quality indoor environments for building occupants.

LEED Gold certification is considered the baseline for major new or replacement health care facilities. LEED certification helps to assure that investments in new health care facilities achieve superior performance in a variety of areas: location and transportation; sustainable sites; water efficiency; energy and atmosphere; materials and resources; indoor environmental quality; innovation and regional priority.

4. Requirements:

Health authorities are required to:

1. Minimize the use of energy, water, chemicals, waste, while ensuring that the energy used is clean and renewable:
 - a) Establish environmental sustainability objectives and, where applicable, sustainability targets with key indicators that will support clean transportation, green design for sites, minimize air pollution, optimize and enhance the well being of occupants within the indoor environment, reduce exposure or use of toxic chemicals, and minimize the production of hazardous and non-hazardous waste.
 - b) Include sustainability measures and targets in the selection of capital assets and procurement of services including energy, water, transportation and waste management (e.g. acquiring IM/IT systems and technologies with low environmental impact, using low greenhouse gas (GHG) emissions construction materials, etc.).

¹ Speech from the Throne, 38th Parliament, Fourth Session (February 12, 2008), page 14:
https://www.leg.bc.ca/content/legacy/web/38th4th/Throne_Speech_2008.pdf

2. Design and construct new health care facilities to achieve LEED Gold certification or equivalent standard:
 - a) Business plans should include an assessment of options to reduce GHG emissions by 50% relative to a baseline of LEED Gold, with an incremental capital cost of up to 3% of the construction budget. If the recommended option does not achieve a 50% reduction in GHG emissions compared to the LEED Gold baseline, an option with incremental capital costs higher than 3% may be included. The assessment of options should also include a presentation of operating costs across a range of natural gas and electricity price scenarios, with the high natural gas price being at least 50% higher than the low natural gas price. Energy modelling study reports should be appended to business plans and include enough information to allow decision makers to understand the scope of the analysis conducted and to inform decisions (see Appendix 1 for guidance).
 - b) Incorporate LEED or equivalent certification costs, draft scorecard and timelines in capital project business plans.
 - c) Register the health facility project with Green Business Certification Inc. to obtain LEED Gold certification following the most recent version of the standard (e.g. LEED Healthcare BD+C V4.1). For equivalent standards, major facility projects are to be registered with their oversight bodies (Green Globe with Green Building Initiative, Living Buildings Challenge with Living Future Institute, WELL and RELi with GBCI) to be certified and are to demonstrate how the standards are equivalent to LEED Gold certification.

5. Definitions

Environmentally sustainable health systems: improve, maintain or restore health outcomes, while minimizing negative impacts on the environment and leveraging opportunities to restore and improve it for the benefit of the health and well-being of current and future generations.²

Equivalent standards: alternative assessment methods and evaluation standards used as rating systems and guidance for green building design, operation and management. Similar to the LEED program, equivalent standards provide market recognition of a building's environmental attributes through third-party verification. Examples of standards or combination of standards that might achieve equivalent green building benefits as LEED Gold certification include the Green Globes System, the Living Building Challenge, WELL or RELI.

Green building: a holistic building that is designed, constructed, and operated to achieve clearly defined environmental, economic, and social performance objectives that are measurably beyond the norm. Green buildings achieve a rating system certification (e.g. LEED), an energy-rating standard and evidence of exemplary equivalent performance (e.g. energy, water, material/resource efficiency, indoor air quality, etc.).³

² [WHO Guidance for Climate Resilient and Environmentally Sustainable Health Care Facilities](#) (pg.22)

³ [Canada Green Building Council, Green Building Toolkit](#)

6. References

[Energy and Environmental Sustainability Design Guidelines \(LMFM\)](#)

[Exploring the Connection Between Healthy Built Environment Toolkit and LEED \(LMFM\)](#)

[Healthy Built Environments Tool Kit \(BCCDC\)](#)

[LEED Canada Certification Process](#)

[LEED Certification Process](#)

[WHO Guidance for Climate Resilient and Environmentally Sustainable Health Care Facilities](#)

Appendix 1 – Energy Modelling and Reports

This appendix is intended to provide high-level guidance regarding the key components of energy modelling study reports to ensure that enough information is provided to decision makers to inform decisions:

1. Introduction (e.g., context, objectives, scope and approach);
2. Inputs and assumptions used and considered in the analysis of the energy conservation measures (ECMs) explored in the study;
3. Description of baseline design/base case used in analysis of the ECMs;
4. Selection criteria used in evaluating and prioritizing possible ECMs;
5. Information regarding the ECMs explored in the study (e.g., description, methodology, considerations (such as benefits, challenges, application), potential synergies with other ECMs, and recommendations, etc.);
6. Results of energy and emissions analysis;
7. Results of financial analysis;
8. Conclusions and recommendations; and
9. Appendices (Quantity Surveyor report on capital costs of ECMs, glossary of defined terms/abbreviations, etc.).

Health Capital Policy Manual

Policy Name: Carbon Neutral and Climate Resilient Health Care Facilities	
Chapter: 12	Effective Date: February 22, 2021

1. Objective

To align health facility planning and design with Government climate legislation, action plans and strategies for minimizing greenhouse gas emissions (GHG) and managing climate risks.

2. Scope

This policy applies to health authorities and their new and replacement construction projects.

3. Context

The Province has set aggressive targets and timelines for GHG emissions reduction.

The *Climate Change Accountability Act* established targets to reduce BC's GHG emissions below 2007 levels by at least 40% by 2030, 60% by 2040 and 80% by 2050.

In December 2018, CleanBC was released. This plan includes actions and goals for British Columbians to build a cleaner future and reduce pollution from energy and waste, become more efficient, use less energy and waste less, while reducing GHG emissions and making sure that the energy used is *clean* and renewable. It is expected that public sector buildings will lead the way in reducing emissions by 50% by 2030, to achieve the overall reduction of emissions from all buildings by 40% by 2030.

In December 2020, the health authorities issued the [Climate Resilience Guidelines for BC Health Facility Planning & Design](#) (the *Resilience Guidelines*). This resource is intended to provide a roadmap to BC health authorities, planning and design teams, and other health system stakeholders to proactively identify, reduce and manage climate change risks (i.e. climate change adaptation) and to enhance health care facility resilience.

Climate resilient health care facilities are able to anticipate, respond to, cope with, recover from and adapt to climate-related shocks and stresses to bring ongoing and sustained health care to their target populations, despite a changing climate.

4. Requirements

Health authorities are required to minimize GHG emissions and to reduce climate risks as follows:

1. Identify and evaluate a reasonable number of design options that will lead to lower GHG emissions from equipment, technology and building systems. Include in applicable business plans an assessment of options to reduce GHG emissions relative to a baseline of LEED Gold by adopting energy efficiency measures and installing low carbon heating and cooling systems that meet operational requirements under local conditions, with the goal of aligning with CleanBC net zero energy efficiency strategies for buildings.
2. Undertake energy modelling including GHG emissions calculations to quantify the potential GHG reduction in each design option by using whole-building energy modelling software or other methods for calculations, depending on the size and complexity of the project. Energy modelling should use future shifted weather files that span asset and facility lifecycles to establish design baselines and future design temperatures. The design selected for implementation is to maximize GHG emissions reduction and satisfy other project requirements while staying within the financial framework of the project.
3. Use climate hazard exposure screens (see the Resilience Guidelines) to identify facility projects that require adaptation to address future climate changes and risks and include their summary in master plans.
4. Require design teams to carry out a climate risk assessment to inform development of business plans and project procurement documents (i.e. Statements of Requirements, Requests for Qualifications, Requests for Proposals).
5. Structure the procurement process to require proponents to carry out a resilient design review and/or a climate risk assessment to validate and expand on resilient design strategies.
6. Require successful proponents to submit a completed climate resilience compliance audit report.
7. Integrate Greening Strategies for Co-benefits to achieve health and climate resilience co-benefits.

5. Definitions

Resilience: in the context of climate change is the capacity of social, economic and environmental systems to cope with a hazardous event, trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure while also maintaining the capacity for adaptation, learning and transformation.¹

¹ [WHO Guidance for Climate Resilient and Environmentally Sustainable Health Care Facilities](#) (pg.22)

Resilience of project design: the extent to which a project’s assets have considered climate risks in their design (e.g. incorporating appropriate adaptation measures as well as accounting for climate risks in the economic and financial analysis demonstrating the viability and value of the project).²

6. References

[CleanBC](#)

[Climate Change Accountability Act](#)

[Climate Resilience Guidelines for BC Health Facility Planning & Design \(v. 1.1\)](#)

[Greening Strategies for Co-benefits](#)

[Low Carbon Building Materials and LEED](#)

[WHO Guidance for Climate Resilient and Environmentally Sustainable Health Care Facilities](#)

[Zero Carbon Building - Design Standard Version 2](#)

² *Resilience Rating System: A methodology for building and tracking resilience to climate change*, World Bank (2021:6). Available at: <https://openknowledge.worldbank.org/bitstream/handle/10986/35039/Resilience-Rating-System-A-Methodology-for-Building-and-Tracking-Resilience-to-Climate-Change-A-Summary.pdf?sequence=9>

Health Capital Policy Manual

Policy Name: Use of Wood in Health Care Facilities	
Chapter: 14	Effective Date: February 22, 2021

1. Objective

To provide guidelines to health authorities on the use of wood in construction of health care facilities to ensure compliance with the requirements of the *Wood First Act*.

2. Scope

This policy applies to health authorities in the process of planning and designing new health care facilities.

3. Context

The [Wood First Act](#) (2009) promotes the use of wood as the primary building material in all new provincially funded buildings in a manner consistent with the building regulations within the meaning of the [Building Act](#).

The BC Building Code and the Vancouver Building By-law impose restrictions regarding use of major materials, fire and life safety design by classifying most health care facilities as non-combustible buildings (requiring heavy timber, steel/concrete construction); however, the use of combustible construction materials, such as wood, can be considered in certain circumstances.

The incorporation of wood as a construction material offers unique challenges in a health care setting not found in other building types. The requirement in acute care settings for homogeneous finishes that are easily cleaned and disinfected, do not harbour organic growth and are durable enough to withstand many years of surface abuse, eliminates wood as a viable material in many clinical settings.

However, there are some innovative solutions outside clinical zones that are appropriate for use of wood as a finish material, such as waiting rooms, hallways and lobbies, or as a structural component in exterior cladding, interior walls, millwork and acoustic panel treatments. For guidance, the Wood Use Matrix for Health Care (see Appendix 1) will be helpful to health authorities when considering the use of wood in the construction of health care facilities.

4. Requirements

Health authorities are required to consider:

1. The use of wood in design of new health care facilities when acceptable by the *Building Act*, BC Building Code, other regulations or building by-laws.
2. The Wood Use Matrix for Health Care to guide health facility design decisions concerning the use of wood.

5. References

[*Building Act*](#)

[Vancouver Building By-law](#)

[*Wood First Act*](#)

APPENDIX 1

Wood Use Matrix for Health Care¹

Building Elements		Sector: Health			
		Building Type			Non-acute
		Acute - Hospitals, health centres, residential care			Offices, public health, minor clinics
		1 storey	2 storey	3+ storeys	
PRIMARY STRUCTURAL SYSTEM	Columns, Beams & Braces	1	2	4	2
	Floor Structure	2	2	4	2
	Exterior Walls	1	2	4	2
	Foundation (v.)	4	4	4	4
	Shear Walls	4	4	4	4
	Bearing Walls	2	2 / 3	4	2 / 3
	Fire Walls	4	4	4	4
	Roof structure (incl columns & braces)	1	2	4	2
	Stairway & elevator shafts	4	4	4	4
SECONDARY STRUCTURE	Convenience Stairs	1	2	3	2
	Entrances & canopies	2	2	3 / 4	2
	Fire separations	1	2	4	2
	Enclosures for mechanical equipment	1	2	4	2
ARCHITECTURAL	Partitions (interior)	2	2	4	2
	Exterior Curtain Walls	3	3	4	3
	Ceilings	2	3	4	2
	Exterior cladding	1	2	4	2
	Parapets (excluding Parapets of Firewalls)	1	2	4	1
	Ceiling bulkheads	1	2	4	1
	Flooring	2	2	4	2
	Doors	1	2	2	1
	Windows	3	3	3	2 / 3
	Skylights	3	3	3	2 / 3
	Trim, panelling, & features	2	2	2	2
	Millwork	2	2	2	2
	Wall and corner guards	2	2	2	2
	Architectural woodwork, other than the above	1	1	4	1
	Landscape - hard landscaping and/ or structures	1	1	1	1
perimeter fences	1	1	1	1	

¹ Developed in 2011 under the leadership of Forestry Innovation Investment FII - a provincial Crown market development agency for forest product, accountable to the B.C. Minister of International Trade, tasked in part with implementing the Wood First Initiative on behalf of the provincial government.