

Appendix C

Sample: Low Carbon Resilience and Environmental Sustainability Scope of Work

For Business Planning at Fraser Health, Providence Health Care, Provincial Health Services Authority, and Vancouver Coastal Health

7/10/2024

Scope of Work Objectives

The goal of this scope of work (SOW) is to produce an integrated low carbon resilience and environmental sustainability (LCRES) report with results and recommendations that are incorporated into the business plan including summary overview, design package, and cost estimate report.

The integrated low carbon resilience and environmental sustainability report should include a summary of key findings from below sections while providing a coherent narrative of all proposed design strategies:

1. Climate Risk Assessment as part of the design team's orientation to the project.
2. Sustainable Design Strategies Report assessing opportunities to reduce impacts from materials used and generated, future active and clean transportation opportunities and demand, in situ natural environment and eco-system services, and water quality risks and conservation opportunities.
3. Low Carbon Study incorporating key results and recommendations from (1) and (2).
4. Annotated scorecard for certification of LEED Gold v4.1 or another approved Green Building Standard (i.e., Passive House Standard, International Living Future Institute (Core Standard) or Zero Carbon Building Standard – Design).

The objective is to develop a base design and design options that:

5. Meet specific requirements in the Ministry of Health (MoH) Capital Policy Manual policies:
 - a. Chapter 11: *Low Carbon Climate Resilient and Sustainable Health Facilities*;
 - b. Chapter 14: *Use of Wood in Health Care Facilities*;
6. Meet requirements of the *Environmental, Social and Governance Framework for Capital (ESGFC)*:
 - a. Appendix 6: *CleanBC Climate Resilience and GHG Reduction Requirements*
 - b. Appendix 9: *Climate Resilience Framework and Standards for Public Sector Buildings*
7. Align with directions provided by the Treasury Board to the Project Team;
8. Ensure alignment with the:
 - a. [Low Carbon Resilience and Environmental Sustainability \(LCRES\) Guidelines for Health Care New Construction](#) (v3.0, March 2024)
 - b. [Climate Resilience Guidelines for BC Health Facility Planning and Design](#) (v2.0, May 2024).
9. Align health organization goals, targets and key performance indicators and policies; and
10. Identify design strategies that align with health organization's clinical, patient healing, staff well-being, population and environmental health objectives.

7/10/2024

Required knowledge and skills include:

11. Climate change experts with climate risk assessment experience;
12. Energy modellers with experience establishing future design conditions using future climate projections and future shifted weather files;
13. Health care design and construction professionals with experience in energy and emissions reduction, embodied carbon/life cycle assessments, low toxicity building materials and finishings, circular economy/construction and operational waste reduction, active and clean transportation, water quality and conservation, natural environments and ecosystem services and indoor air quality;
14. Green building certification professional with specific knowledge of LEED v4.1 Building Design and Construction, ILFI Core Green Building Certification, Passive House Standard, and Zero Carbon Building Standard – Design; and
15. Workshop facilitators and coordinators.

Process Expectations

At project initiation, the Prime Consultant will conduct a kick off meeting with health organization's Energy and Environmental Sustainability (EES) representatives to pass on relevant resources, share learnings from previous projects and discuss critical design objectives, and integrated timeline milestones. Project-specific opportunities to reduce environmental impact and increase low carbon resilience should be identified. Subsequently, EES representatives should be engaged throughout the process via regular check-in meetings with key client representatives.

A. Climate Risk Assessment

To meet Requirement 4.2 in the MoH Chapter 11: *Low Carbon, Climate Resilient and Sustainable Health Facilities* policy, the ESGFC Appendix 9: *Climate Resilience Framework and Standards for Public Sector Buildings* and the *Climate Resilience Guidelines for BC Health Facility Planning and Design* during Business Plan development, and enable the project to meet additional requirements post-Business Plan approval, the Successful Proponent will:

1. Confirm the criticality of the health facility to its occupants, the organization, the community and the health system. The Prime Consultant should verify whether the Authority has already assigned a criticality classification to the health facility in question.
2. Review, synthesize and present relevant climate hazard and risk information produced by the Authority, and other resources as required for a comprehensive understanding of the site's context. If not already completed, conduct an exposure screen to identify climate change-related hazards that are most relevant to the project site.
3. Conduct a Climate Risk Assessment to identify and prioritize climate risks.
 - a. A climate risk assessment involves establishing the likelihood of a given hazard impacting a facility or a facility component combined with the consequence should the impact occur.
 - b. Outcomes of the climate risk assessment will include a list of impacts with associated risk scores (e.g., "low", "medium", "high"), informing which hazards and/or impacts should be accounted for in planning and design.

- c. Best practices from climate risk assessment standards and frameworks should be followed, including but not limited to: ISO 31000: Risk Management; ISO 14091: Adaptation to Climate Change; PIEVC Protocol; PIEVC High Level Screening Guide; and Infrastructure Canada’s Climate Lens General Guidance.
 - d. The assessment will include engagement through a workshop with a variety of stakeholders, including but not limited to the project team, facilities staff, clinical staff, subject matter experts, and more.
 - e. It is possible that one of the conclusions of the climate risk assessment is that a more detailed engineering analysis is required for certain topics at later stages of design.
4. Identify relevant climate resilience requirements and any additional resilience strategies to be embedded in planning and design.
- a. This step involves identifying which sections of the *Climate Resilience Framework and Standards for Public Sector Buildings* are applicable to the project.
 - b. It may be appropriate to go above and beyond these minimums, depending on the findings of the climate risk assessment, other applicable codes and standards (e.g., CSA Z8000), and the specific needs of the project.
 - c. One key requirement will be the selection of design parameters that account for future climate projections (also known as “climate-projected design parameters”, “climate-adjusted design criteria”, “future-shifted weather files” or similar). Selection of these design parameters may be informed by the service life of the facility and/or its components, and greenhouse gas emissions scenarios and associated global temperature increases.
 - d. Outcomes should help to inform accurate cost estimates by the project’s Quantity Surveyor for climate resilience measures and adaptation pathways.
5. As a component of the LCRES report, prepare a climate risk assessment summary that includes at minimum:
- a. An outline of approach and process, including methodology selection, data and information reviewed, and engagement conducted.
 - b. Summary of inputs and outputs, including hazards, impacts and associated risk scores, and established climate resilience requirements.
 - c. Recommendations for climate resilience measures, along with associated co-benefits for low carbon and environmental sustainability.
 - d. Next steps for identifying and tracking of strategies that meet established climate resilience requirements to ensure that prioritized climate impacts are accounted for in facility planning and design.

B. Environmental Sustainability

As part of the development of sustainable design strategies (including but not limited to management plans identified in the MoH Chapter 11: *Low Carbon, Climate Resilient and Sustainable Health Facilities* policy), the Successful Proponent will be required to:

- 1. Conduct a preliminary Low Carbon and Environmental Sustainability workshop with clinical and non-clinical stakeholders with the intention of:
 - a. setting objectives and priorities for the project;

- b. identifying sustainable building design strategies that align with climate resilience measures, improve clinical objectives, and maximize patient healing, staff well-being and population health outcomes.
2. Complete workshop prior to, or early in Schematic Design so there is greater opportunity for workshop results to influence design strategies.
3. Write a workshop summary report that includes participants, activities, feedback/results and recommendations.
4. Develop a qualitative and, where possible, quantitative cost/benefit comparison of “enhanced” design strategies (relative to base design). Design strategies will be determined collaboratively with EES and the project team in order to create alignment with the project location, services, vision and principles, as well as low carbon and resilience objectives.
5. Help to inform accurate cost estimates for “enhanced” sustainable design strategies (relative to base design) by including the project’s Quantity Surveyor throughout the process.
6. Include, where appropriate:
 - a. Considerations for operations and maintenance of the building.
 - b. Recommendations for additional analysis to be completed prior to, or during the RFP and owner’s project requirements (OPR) development stages.
 - c. Recommendations for future health organization new construction projects with the intention of continuous learning and improvement.

C. Low Carbon Study

To meet Requirement 3.1 in the MoH Chapter 11: *Low Carbon, Climate Resilient and Sustainable Health Facilities Policy*, the Successful Proponent will carry out a Low Carbon Study that includes a Life Cycle Assessment for embodied carbon. The Low Carbon Study will develop a baseline and multiple design options:

- **Baseline:** LEED Gold: adopt energy efficiency measures through low carbon heating and cooling systems that meet operational requirements under local conditions and include electrification measures that are cost neutral in comparison to conventional natural gas systems.
- **Option 1 Low Carbon:** an enhanced version of the baseline, with additional low carbon design features with an incremental cost of up to 3% of full project construction costs.
- **Option 2 Net Zero Carbon Site:** A further enhanced design to reduce site-level emissions to net zero carbon, through either fully electrified building design or on-site renewable energy generation and to include scenario analysis for incorporating renewable natural gas.

The objective of the Low Carbon Study is to reduce operational emissions while minimizing operational cost impacts. The Successful Proponent will develop a report outlining the outcomes of an energy model with site-specific future weather files (e.g., CWEC 2050), and multiple scenario simulation analysis, for each option under consideration. The Low Carbon Study report should include at minimum:

1. Evaluated Energy Conservation Measures (ECMs), and Low Carbon Measures (LCM) complete with energy use, carbon emissions, capital cost (verified by the project’s Quantity Surveyor) and operating cost performance indicators.

2. Incorporation of “enhanced” measures from Climate Risk Assessment and Environmental Sustainability Assessment into simulation analysis.
3. Design scenarios consisting of bundles of ECMs; including defined GHGI, TEUI, TEDI, EUI (including total electricity in MWh/year and natural gas in GJ/year), peak demand, absolute carbon emissions and energy cost performance along with a description of the measures implemented in each scenario.
4. Assessment of options is to include a presentation of operating costs across a range of natural gas and electricity price scenarios. Include predicted increases in the British Columbia carbon tax.
5. Summary report of the energy model input parameters for potential future application by EES representatives through both the CleanBC New Construction Program and FortisBC Commercial New Construction Program.
6. Conduct a life cycle assessment (LCA) of the indicative design in parallel to the low carbon study. Outputs from LCA are to support a low carbon study to determine lowest cost pathway to GHG emission reductions.

D. Green Building Standard Study

Review the Green Building Standards applicable and relevant to the project, based on options approved in the ESGFC (i.e., LEED Gold v4.1, Passive House Standard, International Living Future Institute (Core Standard) or Zero Carbon Building Standard – Design). Provide summary report, meet with the EES team and relevant consultants to review findings and recommendation for inclusion in the Business Plan.

E. Integration Meeting

Conduct an Integration meeting with EES representatives and consultants involved in Part A, B, C and D. Review the outcomes of Part A, B, C and D, discuss co-benefits and priority, and review any further low carbon resilience and sustainable design strategies. The outputs of this section should include at minimum:

1. An output table detailing co-benefits of recommended design strategies.
2. List design strategies that require HA actions.
3. Annotated LEED Score Card, or similar analysis of credits, compliance paths, costs and strategies to achieve certification for the chosen Green Building Standard.