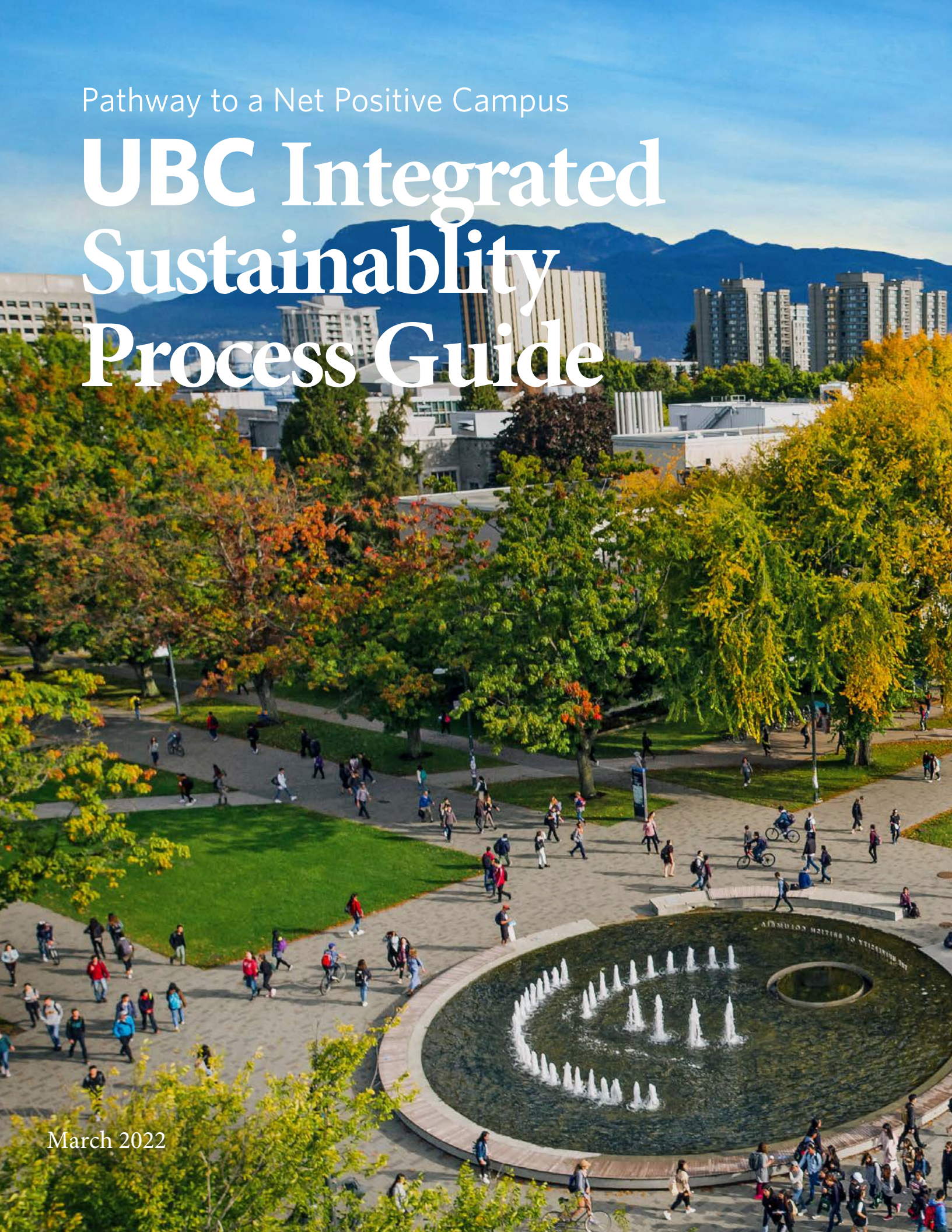


Pathway to a Net Positive Campus

UBC Integrated Sustainability Process Guide

March 2022



UBC Integrated Sustainability Design Process

Introduction

[UBC's development process for major capital projects](#) involves a number of steps, approvals and key stakeholders. The design process begins after Board 1 approval and hiring of the architect. UBC recommends all projects embrace an integrated design approach as part of their overall design process.

The UBC Integrated Sustainability Process, shown in Table 1 below, defines a framework for project teams to help support high-performance, cost-effective project outcomes through an early analysis of the synergies across disciplines and building systems. This Process includes four steps, including three sustainability workshops, to enhance collaboration and communication between different project stakeholders and ensure that the project goals are met.

For detailed prerequisites and deliverables for each Step see Table 2 at the end of the document.

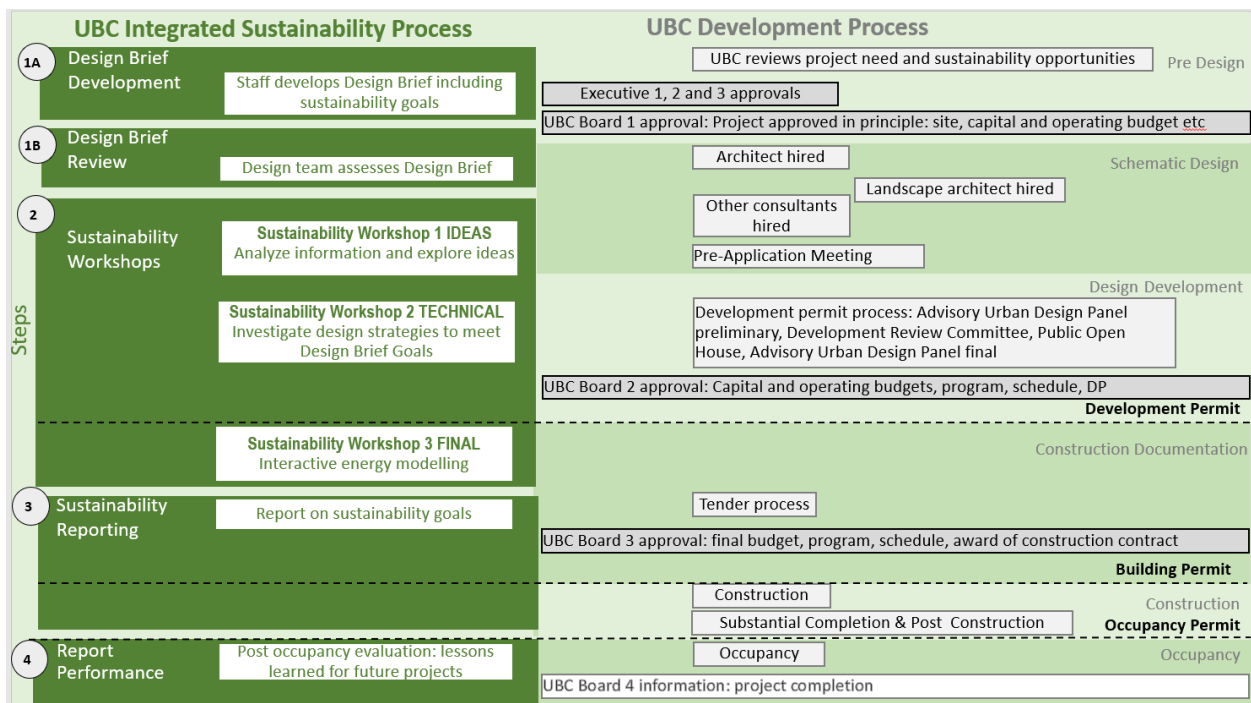


Table 1: UBC Integrated Sustainability Process summary mapped to the Development Process for Major Capital Projects

Step 1A: Design Brief Development

The Design Brief is developed before the design team is hired to provide the Project Team with a guiding framework and a set of design goals and strategies, reflecting the particular challenges and opportunities of the project.

The Design Brief is developed by UBC Campus & Community Planning (C&CP) in consultation with relevant UBC departments and stakeholders and based on preliminary site analysis, orientation and massing studies.

The Design Brief describes project goals, urban design guidelines and integration of sustainability objectives into the embedded set of key goals. It is intended as a starting point from which a shared understanding of the project will evolve. As the project proceeds, the Design Brief will act as a reference to evaluate the performance of the project.

Using the Design Brief and the Owner's Project Requirements (OPR), the project team will develop the Basis of Design, design documents, and construction documents for the project.

Step 1A: Design Brief Review

The first step is for Project Team members to be familiarized themselves with the Design Brief prepared by C&CP, establish a shared vision and a holistic understanding of the project to promote inclusiveness and collaboration which should translate into collective decision making. The key activities of this step is for the Project Teams to assess, analyze and seek clarification of the design brief goals. This step is usually carried out with the project Working Group.

Step 2: Sustainability Workshops

UBC recommends three workshops with the design team and university stakeholders to fully explore and integrate the sustainability goals into the project design. The time duration for these workshops may vary based on the nature and size of the project, typically from 1 to 3 hours.

Notes for all Sustainability Workshops

1. Recommended Invitees:
 - a. Appropriate Consultant Team members (schedule consultants and specific stakeholders as appropriate)
 - b. User group representation
 - c. Project Manager UBCPT or UBCPS
 - d. Sustainability & Engineering - Green Building Manager
 - e. Facilities Planner
 - f. Building Operations representatives
 - g. Energy and Water Services representatives

2. Project Teams to submit an agenda and other key project information prior to each workshop to facilitate the discussion and coordination among various stakeholders.
3. Consultant Team to lead and facilitate the workshops.
4. The workshop should embrace an integrative design approach which is technical and results oriented
5. These workshops are meant for interactivity and discussion among the Project Team members and UBC stakeholders and time for discussion should be included in the agenda.
6. After the workshop:
 - a. Discuss findings and conduct follow-up investigations
 - b. Finalize strategies and targets
7. Circulate minutes with actionable items and workshop presentations to participants

Sustainability Workshop 1: Ideas -analyze information and explore idea

The first workshop takes place during early schematic design and provides early focus on site conditions, building massing and orientation (using the preliminary massing studies in the design brief as a starting point), building materials, envelope attributes, sustainable energy and water systems, operational parameters and climate resiliency. The workshop aims to explore ideas for the project to achieve project Design Brief goals and additional net positive design possibilities which align with the Green Building Action Plan and UBC policies.

LEED projects: a preliminary scorecard using the LEED Implementation Guide should be developed to initiate discussion establish process to achieve certification

Sustainability Workshop 2: Technical- investigate design strategies to meet Design brief Goals

The second workshop investigates design strategies and synergies that will meet the project goals confirmed in workshop 1. The agenda should include presentation of preliminary analysis of the energy/ carbon and water related systems. The meeting should address strategies that integrate well with the overall project objectives and include discussions on meeting UBC policies including: reducing operational carbon and embodied carbon, climate readiness and bird friendly design.

LEED projects: discuss updated scorecard and credit variances

Sustainability Workshop 3: Final – interactive energy modeling

The final workshop takes place during design development and uses interactive energy modeling to evaluate the trade-offs between energy performance, life cycle cost and system complexity. Review potential energy/carbon reduction strategies to inform and refine energy system and envelope design relative to life cycle costs. Indicate how project energy and carbon targets as well as LEED energy credits will be achieved providing information on energy standards and code compliance.

At least three options of mechanical system design should be considered including the pros and cons of each option and listing total life cycle costs, capital costs, carbon abatement.

Embodied carbon preliminary analysis should be considered at this workshop.

LEED projects: discuss updated scorecard, indicate preliminary modeling results and strategies for E&A and Building Life cycle Impact Reduction LEED credits

Step 3: Sustainability Reporting- report on sustainability goals

Report on the cross-cutting strategies used to achieve performance and process targets for each Design Brief goal and any additional strategies identified during the design process which align with UBC policies.

This step can be accomplished by submitting the following prior to Building Permit:

- Meeting minutes and presentations from workshops 1, 2 and 3
- Final energy model report (include appendix showing GHGI using current emissions factors)
- Life Cycle costing for low carbon energy system options
- M&V and/or Cx Plan

LEED projects: submit updated LEED scorecard and credit variances

Step 4: Report Performance- post occupancy evaluation: lesson learned for future project

This is the final step is performed by UBC Staff who report broad sustainability outcomes from the project for inclusion in the Board 4 information meeting minutes and for consideration by the Better Building Committee. The reported performance includes one year of performance records for the building, including LEED status and energy/ carbon metrics, and is intended to inform the sustainability and design aspects of future campus projects. Selected items will be included on the Board 4 Report to the Board of Governors.

LEED projects: LEED certification and variances are reported

UBC INTEGRATED SUSTAINABILITY PROCESS - Major Capital Projects (updated February 2022)

| Phase | Step | Responsibility | Description | Prerequisites | Deliverables | Participants |
|--|--|---------------------------|---|--|---|--|
| Pre-Design | Step 1A: Design Brief Development | C&CP | <ul style="list-style-type: none"> Staff develops a guiding framework and a set of design goals and strategies, reflecting the particular project challenges and opportunities Preliminary site analysis, orientation and massing study completed by staff | Stakeholder engagement | Design Brief (including: the project vision, urban design framework, green building requirements etc) reflecting the design aspirations of stakeholder groups | UBC stakeholders |
| | Board 1 | | | | | |
| | Step 1B: Design Brief Review | Design Team | <ul style="list-style-type: none"> Design Teams to assess and analyse the Design Brief and seek clarification of goals Site visit occurs for architect and landscape architect | <ul style="list-style-type: none"> Design brief prepared Architect selected Preliminary Owner's Project Requirements | Comprehensive understanding of the Design Brief document | UBC stakeholders and Design Team |
| Schematic Design | Step 2: Sustainability Workshop 1 IDEAS | Organized by: Design Team | <ul style="list-style-type: none"> The first workshop is a facilitated meeting which provides, using the design brief as a basis, a focus on site conditions, building massing & orientation, building materials, envelope attributes, sustainable energy and water systems, operational parameters and climate resiliency Explore ideas for the project based on the Design Brief goals as well as UBC's GBAP goals, targets and vision | <ul style="list-style-type: none"> Schedule early enough in schematic design to inform massing decisions and encourage "out of the box" thinking Team's initial information analysis complete Preliminary identification of dominant energy loads and indoor, outdoor, and process water demand Owner's Project Requirements received | <ul style="list-style-type: none"> With input from the entire design team, ideas are discussed which meet the Design Brief goals Additional net positive design possibilities identified which align with UBC policies and GBAP vision Passive design and synergies considered Design options identified to be considered for LCA1 evaluation LEED: preliminary scorecard, LEED certification level variance requested if applicable | <ul style="list-style-type: none"> Key design team members Key UBC stakeholders Project Manager |
| | AUDP Pre-application | | | | | |
| | Step 2: Sustainability Workshop 2 TECHNICAL | Organized by: Design Team | <ul style="list-style-type: none"> The second workshop is a facilitated meeting which investigates design strategy synergies that will meet the goals set out in the Design Brief Preliminary energy/ carbon and water budget analysis are presented to verify targets, performance benchmarks, and potential strategies to achieve project goals Explore synergies among systems and components. | <ul style="list-style-type: none"> Schedule with AUDP pre-application meeting during schematic design Completed preliminary LCA1 Preliminary energy analysis complete Review AUDP comments on sustainable outcomes | <ul style="list-style-type: none"> Agreement on specific targets for each Design Brief goal Conceptual building envelope design defined Design strategies to address climate readiness identified Preliminary energy performance analysis submitted LCA informs structural and/or envelope system selection Low carbon energy systems options defined for life cycle costing Approach to bird friendly design identified LEED: updated LEED scorecard | <ul style="list-style-type: none"> Key design team members Key UBC stakeholders Project Manager |
| Development Permit Process: Advisory Urban Design Panel (AUDP), Development Review Committee (DRC), public open house | | | | | | |
| | Board 2 | | | | | |
| | Development Permit (DP) | | | | | |
| Design Development | Step 2: Sustainability Workshop 3 FINAL | Organized by: Design Team | <ul style="list-style-type: none"> The final workshop is a facilitated meeting which uses interactive energy modeling to evaluate the trade-offs between carbon/energy performance, life cycle cost and system complexity. Review potential energy/carbon reduction strategies to inform and refine energy system and envelope design relative to life cycle costs. | <ul style="list-style-type: none"> Schedule at the end of design development Energy model complete | <ul style="list-style-type: none"> Consensus on carbon reduction, energy conservation and climate ready measures Energy model report (include GHGI for emissions factors at DP) Life cycle costing for low carbon energy system options Energy and GHGI targets finalized LEED: updated LEED scorecard, credit variance requests, LEED Online Project Registration number | <ul style="list-style-type: none"> Key design team members Key UBC stakeholders Project Manager |
| Construction Documents | Step 3: Sustainability Reporting | Design Team | Report on the cross cutting strategies used to achieve performance and process targets for each Design Brief goal and any additional strategies identified during the design process which align with UBC policies. | Submit before BP | <ul style="list-style-type: none"> Meeting minutes and presentations from workshops 1,2 and 3 LEED score card and credit variances Final energy model (include appendix showing GHGI using current emissions factors) Note: Submit prior to occupancy: Measurement and Verification (M&V) plan Commissioning (Cx) Plan LCA2 report and submittals | Design Team |
| | Board 3 | | | | | |
| | Building Permit (BP) | | | | | |
| Construction/ Occupancy | Step 4: Report Performance | ID | UBC Staff to report broad outcomes from the project for inclusion in the Board 4 meeting minutes and for consideration by the Better Building Committee. Includes LEED status and energy/carbon metrics performance. | 1 year of performance records available | <ul style="list-style-type: none"> Feedback to inform future projects Selected outcomes included in Board 4 report | UBC stakeholders |
| | Board 4 | | | | | |