2. Overview

THE PLAN: **AT A GLANCE**

As a quick reference, the following pages provide a summary of the component goals, targets and indicators as well as a **sample** of key priority actions in each component area.

For more detail in each component area including a complete list of priority actions and an explanation of the context, key directions, and pathway to net positive, *see The Institutional Green Building Action Plan (Page 42)* and *The Residential Green Building Action Plan (Page 66).*

Main Mall looking south
PHOTOGRAPHER: HOVER COLLECTIVE

THE PLAN: AT A GLANCE

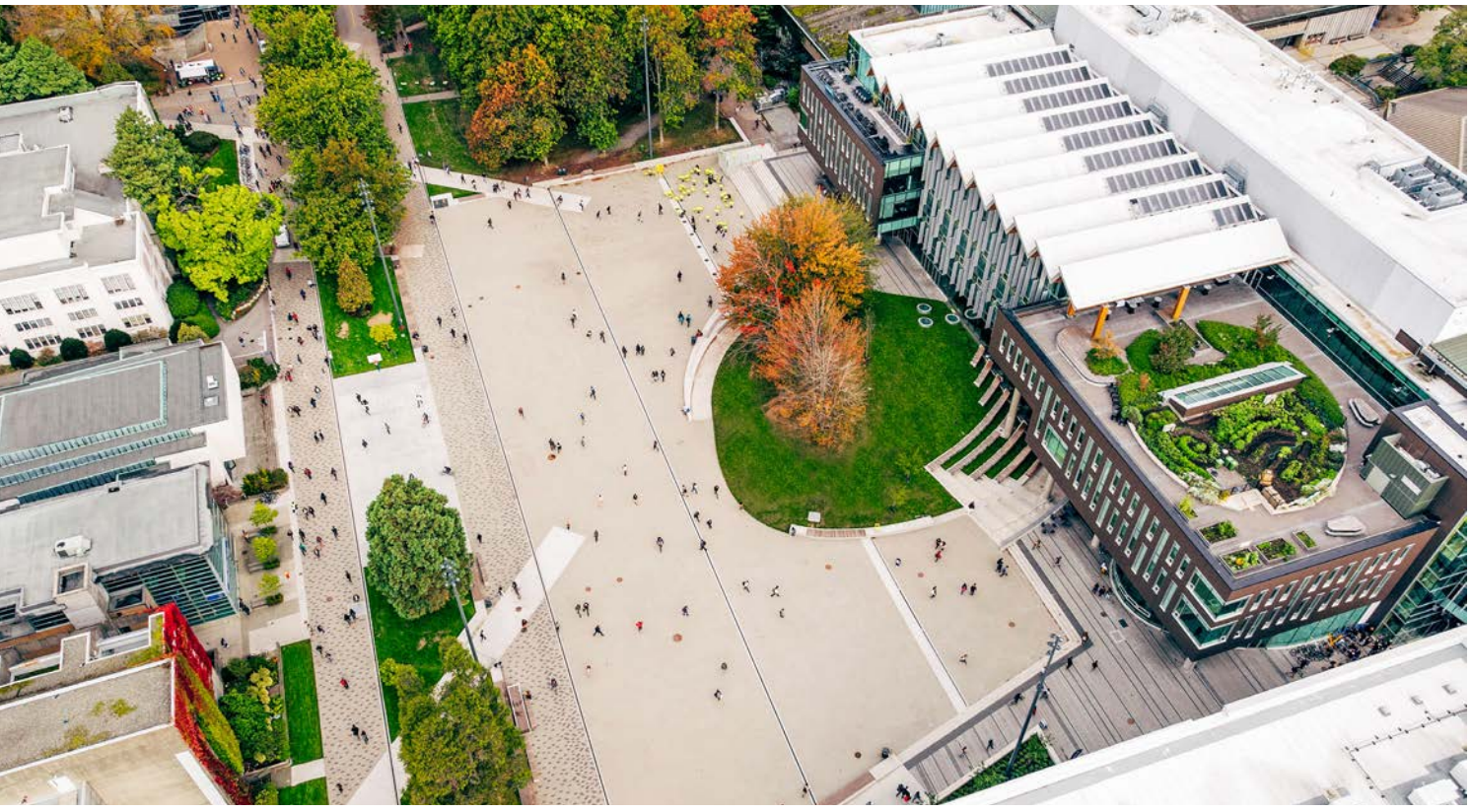
Vision

Below: AMS Student Nest
ARCHITECT: DIALOG AND B+H ARCHITECTS
PHOTOGRAPHER: HOVER COLLECTIVE

By 2035, UBC's buildings will make net positive contributions to human and natural systems.

Objectives

- Create an exceptional built environment on campus and in the neighbourhoods that will attract, engage and retain a diverse global community of outstanding students, faculty, staff and community members.
- Achieve continuous improvement to ecological and human health, driven by experience and lessons learned from previous plans and projects.
- Create a net positive pathway for the design and construction of new buildings, renovations and retrofits over the next 17 years.
- Demonstrate UBC's commitment to leadership and innovation in green buildings across social, environmental and economic dimensions.
- Support teaching, learning and research opportunities through academic engagement.
- Improve clarity and predictability of process.
- Optimize total cost of ownership for buildings.



THE PLAN: AT A GLANCE

Process

Process is a cross-cutting initiative across all component areas.

GOALS

- *UBC policies and processes will support the achievement of the GBAP component goals and targets.*
- *GBAP component goals and targets and will be communicated and easily accessible to internal and external stakeholders.*
- *UBC will integrate lessons learned from each project to improve building designs.*
- *UBC buildings will be evaluated as opportunities for research, innovation and continuous improvement.*
- *UBC will commit to monitoring and benchmarking building performance to encourage continuous improvement on campus and in relation to industry standards.*

TARGETS AND INDICATORS

INSTITUTIONAL

Target: 100% of projects will conduct life cycle costing by 2025.

RESIDENTIAL

SAMPLE KEY PRIORITY ACTIONS

INSTITUTIONAL

- Explore the implementation of a benchmarking platform for energy, emissions, water and waste reporting.
- Develop a more refined life cycle costing tool and/or an approach to better understand the total cost of ownership for the university during the design process by exploring design options.
- Develop a decision-making tool template for tier 1 and tier 3 projects to determine project priorities.
- Develop short-term and long-term strategic research opportunity plans to help connect the necessity of physical facilities to the enhancement of UBC's academic mission.
- Align the UBC Technical Guidelines with GBAP requirements through an annual review-and-update process that fully engages stakeholders.

RESIDENTIAL

- Develop a sustainability process for new residential construction.
- Develop a process to introduce GBAP requirements for retrofit and renovation projects in neighbourhoods.
- Create REAP credits for mandatory benchmarking, performance reviews and post-occupancy surveys.

THE PLAN: AT A GLANCE

Energy

COMPONENT GOALS

- *UBC buildings and landscapes will advance the campus towards net positive energy use and greenhouse gas neutrality by reducing energy demand and focusing on site-specific passive design approaches.*
- *UBC buildings will have indoor thermal environments that are comfortable and energy efficient.*
- *UBC will integrate lessons learned to improve building energy performance.*

TARGETS AND INDICATORS

INSTITUTIONAL

Target: New institutional buildings will meet incrementally reduced energy targets to be Net Positive Ready by 2030.

Target: Reduce average building thermal energy use intensity (TEDI plus DHW) for campus buildings by 50% to 75 kwh/m²/yr by 2050.

Target: Reduce the performance gap between modelled and metered energy use in new institutional buildings by 75% within three years of occupancy by 2020.

RESIDENTIAL

Target: New residential buildings will meet energy targets to be Net Zero Ready by 2032 in alignment with the BC Energy Step Code.

Indicator: Increase energy efficiency of existing residential buildings through standards and programs.

SAMPLE KEY PRIORITY ACTIONS

INSTITUTIONAL

- Implement mandatory incremental energy use intensity (EUI), thermal energy demand intensity (TEDI) and domestic hot water (DHW) targets; consider development of thermal demand (W/m²) and GHG intensity (kgCO2e/m²/yr) targets for tier 1 and 3a projects.
- Identify passive and mechanical design requirements for buildings of different uses and space criteria that achieve comfortable indoor environments under predicted future climate conditions.

RESIDENTIAL

- Develop GHG intensity targets to ensure cost-effective pathways to zero GHG emissions for buildings connected or not connected to the Neighbourhood District Energy System (NDES).
- Mandate incremental energy use intensity (EUI) and thermal energy demand intensity (TEDI) building targets that align with BC Energy Step Code requirements and support the development of the NDES renewable energy centre by 2024.
- Mandate whole building airtightness testing and energy modelling in alignment with BC Energy Step Code by 2018 and set airtightness targets by 2020.

THE PLAN: AT A GLANCE

Water

COMPONENT GOALS

- *UBC will practise responsible water management and use at the building and site scale by advancing water conservation and efficiency, exploring alternative water supply and treatment solutions and building water supply resiliency.*
- *UBC will use a low-impact development approach to rainwater management at the site scale to mitigate risk and respect the natural hydrology of the campus.*

TARGETS AND INDICATORS

INSTITUTIONAL

Target: Reduce the water use intensity on campus by 16% in 2025 and 24% in 2030 (relative to a 2017 baseline), resulting in total water consumption remaining at or below 2017 levels despite growth.

Target: Meter and report on water consumption for individual UBC buildings to enhance our ability to make strategic decisions on water conservation by: 1) ensuring all new buildings include water metering, 2) maintaining or replacing existing meters as required, and 3) adding meters where economically viable, over the next five years.

Target: Maximize rainwater management using low-impact development on building sites that are more than 300m from cliffs.

Indicator: Increase infiltration, retention and detention of rainwater on campus.

RESIDENTIAL

Target: Maximize rainwater management using low-impact development on building sites that are more than 300 m from cliffs.

Indicator: Increase infiltration, retention and detention of rainwater in the neighbourhoods.

SAMPLE KEY PRIORITY ACTIONS

INSTITUTIONAL

- Implement water metering requirements into (building) policy in alignment with the Water Action Plan.
- Develop guidelines for alternative water supply sources and systems in buildings (e.g., rainwater harvesting or water reuse systems) and on-site storage in buildings.
- Require all tier 1, 2 and 3a projects to achieve equivalent to LEED v4 Rainwater Management credit, Option 2.

RESIDENTIAL

- Develop a water metering strategy (building and suite level) for residential buildings; consider a visualization concept that concurrently educates users.
- Develop criteria and guidelines for green roof and blue roof projects, based on rainwater management capacity, co-benefits, maintenance and operation considerations for residential building typologies.
- New residential projects to achieve the same rainwater management requirements as institutional projects by 2020.

THE PLAN: AT A GLANCE

Materials & Resources

COMPONENT GOALS

- *UBC will prioritize the use of building materials that have net positive environmental impacts.*
- *UBC will support marketplace transformation by designing buildings with materials that are not harmful to human and ecological health.*
- *UBC will support the development of the circular economy by promoting the adaptation, reuse and recycling of materials and products during a building's lifetime.*

TARGETS AND INDICATORS

INSTITUTIONAL

Target: Eliminate 100% of UBC-identified building materials in new construction that are known to be detrimental to human health by 2035.

Target: Require all new buildings to be Zero Waste Ready by 2020.

Target: Divert 100% of construction and demolition waste from landfill by 2035.

Indicator: Embodied carbon is calculated for all construction projects.

RESIDENTIAL

Target: Eliminate 100% of UBC-identified building materials in new construction that are known to be detrimental to human health by 2035.

Target: Require all new buildings to be Zero Waste Ready by 2020.

Target: Divert 100% of construction and demolition waste from landfill by 2035.

SAMPLE KEY PRIORITY ACTIONS

INSTITUTIONAL

- Develop guidelines for making building material choices through research (level 2)[7] that are informed by health impacts based on a review of best practices, market supply, and stakeholder engagement (i.e., list commonly used building materials considered harmful to health in the sourcing, manufacturing, installation, occupancy or end-of-life phase).
- Implement policies for reduced embodied carbon in buildings, starting with a requirement to report embodied carbon, followed by incremental reductions.

RESIDENTIAL

- Require incremental reductions in the environmental impact of building materials, based on pilots, best practice review and market readiness study.
- Create an integrated policy for building materials that considers reduced environmental impact, healthy material requirements, and life cycle analysis.

[7] *See page 10 for a description of teaching, learning and research levels.*

THE PLAN: AT A GLANCE

Biodiversity

COMPONENT GOALS

- *UBC will develop highly functioning landscapes at the building and site scales to contribute to biodiversity and natural ecosystem processes.*
- *UBC will engage campus teaching and research opportunities to enhance biodiversity management capacity.*

TARGETS AND INDICATORS

INSTITUTIONAL

Target: Require 100% compliance to UBC Bird Friendly Design Guidelines for Buildings for new institutional buildings by 2020.

Indicator: Increase opportunities to provide habitat for birds, pollinators and other species.

RESIDENTIAL

Target: Require 100% compliance to UBC Bird Friendly Design Guidelines for Buildings for new residential buildings by 2025.

Indicator: Increase opportunities to provide habitat for birds, pollinators and other species.

SAMPLE KEY PRIORITY ACTIONS

INSTITUTIONAL

- Develop a set of principles for landscapes and green roofs that consider the following: 1) ability to adapt to climate change, 2) ability to attract pollinators, 3) reduction of invasive species, 4)microclimate suitability (sun, shade, etc.), 5) ability to support passive solar strategies (e.g., provide shade, reduce wind), 6) campus character zones and irrigation zones (green or brown areas), and 7) regional biodiversity priorities.
- Engage a consultant(s) to conduct site assessments to identify and assess the ecological assets, endangered and vulnerable species, and environmentally sensitive areas on a campus or neighbourhood scale. Site assessment reports will be used to inform individual project designs.

RESIDENTIAL

- Further develop the UBC Bird Friendly Design Guidelines for Buildings and create a mandatory policy in order to reduce the number of bird collisions with buildings.
- Develop a set of principles for neighbourhood landscapes and green roofs that consider the following: ability to adapt to climate change, ability to attract pollinators, microclimate suitability (suns, shade, etc.), ability to support passive solar strategies (e.g., provide shade, reduce wind), irrigation zones (green/brown areas), and regional biodiversity priorities.

THE PLAN: AT A GLANCE

Health & Wellbeing

COMPONENT GOALS

- *UBC will enhance the mental, physical and social dimensions of wellbeing by making them integral to building and landscape design decisions.*
- *UBC researchers, community stakeholders and building occupants will be engaged in a meaningful and ongoing way to inform building and landscape design decisions around health and wellbeing.*
- *UBC will become a leader in enhancing wellbeing through the built environment within the context of higher education in Canada.*

TARGETS AND INDICATORS

Targets and indicators for this emergent component area to be integrated into future updates of the GBAP.

SAMPLE KEY PRIORITY ACTIONS

INSTITUTIONAL

- Develop health and wellbeing guiding principles for building design that promote physical, mental and social wellbeing (e.g., incorporating social or contemplative space, designing spaces that allow inclusion, incorporating universal design principles, promoting ease of use, incorporating ergonomic principles, developing daylighting requirements, considering acoustic requirements, etc.).
- Coordinate with UBC's Wellbeing Strategy in collaboration with UBC Wellbeing to guide how building and landscape design can nurture physical, mental and social dimensions of health and wellbeing.

RESIDENTIAL

- Identify metrics for health and wellbeing in residential buildings (e.g., temperature, indoor air quality, daylight levels, acoustic levels, views to exterior, number of indoor plants, etc.).
- Update REAP to include health and wellbeing credits.

THE PLAN: AT A GLANCE

Quality

COMPONENT GOALS

- *UBC buildings and landscapes will be durable, reliable and resilient.*

TARGETS AND INDICATORS

INSTITUTIONAL

Target: Major projects track and achieve their design brief sustainability goals by 2020 (subject to approved changes during design process).

Target: Achieve 100% compliance with UBC Technical Guidelines by 2025 (compliance allows for approved variances).

Target: Achieve 100% compliance with UBC sustainability submission requirements by 2025 (compliance allows for approved variances).

RESIDENTIAL

Target: Achieve 100% compliance with REAP Gold requirements by 2020.

SAMPLE KEY PRIORITY ACTIONS

INSTITUTIONAL

- Develop a strategy to conduct a full review of the UBC Technical Guidelines to ensure clarity and eliminate redundancies.
- Review and investigate opportunities to apply international climate resilience standards, such as the RELi resilience standard, to projects.

RESIDENTIAL

- Create a branding strategy for REAP to increase awareness of UBC's sustainable buildings.
- Work with real estate agents to ensure all buyers are aware of sustainability benefits associated with buildings.

THE PLAN: AT A GLANCE

Climate Adaptation

COMPONENT GOALS

- *UBC buildings and landscapes will have the resilience to respond to both anticipated and unpredictable changes in climate.*
- *UBC will engage with researchers in a meaningful and ongoing way to inform building policy and guidelines around climate adaptability.*

TARGETS AND INDICATORS

Targets and indicators for this emergent component area to be integrated into future updates of the GBAP.

SAMPLE KEY PRIORITY ACTIONS

INSTITUTIONAL

- Conduct vulnerability assessments of campus buildings, landscapes and infrastructure at periodic intervals.
- Coordinate with the campus-wide Resiliency Initiative and climate adaptation strategies, as they evolve based on vulnerability assessments, evaluations and best practice review, by implementing policies on a building and landscape scale that respond to key climate change impact areas (e.g., increased temperature, variable weather patterns, increased flood events, increased smoke, increased peak events, etc.).

RESIDENTIAL

- Implement policies (REAP updates, neighbourhood plans) for climate adaptability in the neighbourhood built environment.

THE PLAN: AT A GLANCE

Place & Experience

COMPONENT GOALS

- *UBC buildings and landscapes will provide opportunities for collaboration, innovation and community development to reflect the social and environmental sustainability aspirations of the University.*

TARGETS AND INDICATORS

Targets and indicators to be integrated into future updates of the GBAP.

SAMPLE KEY PRIORITY ACTIONS

INSTITUTIONAL

- Review the Public Realm Plan goals and guidelines for better coordination and compliance of building landscapes.
- Establish additional GBAP place and experience goals, in coordination with Campus and Community Planning, to help express a project's social, environmental and economic sustainability goals.
- Integrate heritage consideration early in the design through mandatory "Statements of Significance" for existing buildings.

RESIDENTIAL

- Establish GBAP place and experience goals for buildings and landscapes in coordination with Campus and Community Planning during neighbourhood development (e.g., goal: the design of the building and landscape expresses elements of UBC's social and/or environmental sustainable design initiatives).