

Climate Adaptation

COMPONENT GOALS

01

UBC buildings and landscapes will have the resilience to respond to both anticipated and unpredictable changes in climate.

02

UBC will engage with researchers in a meaningful and ongoing way to inform building policy and guidelines around climate adaptability.

CONTEXT

Through historical evidence and future modelling we know that temperatures will continue to rise as a result of climate change.

For the Lower Mainland, modelling predictions indicate that there will be long-term warming, more extreme weather events, changing precipitation patterns and rising sea levels.¹⁶ These changes mean an increased risk of flooding, damage from storms, and overheating during summer highs. Changes to the design, construction and renovation of buildings and landscapes will be required to adapt to these future impacts. Without action, UBC's livability and economic prosperity goals are at risk.

Climate adaptation could be achieved through a change in approach to different aspects of building design, including: building form and orientation, building envelope, roof design, shading and glazing design, internal layout, interior environment, service infrastructure, exterior spaces, and the relationship between indoor and outdoor space. A key change at UBC is it that buildings will need to be designed for human comfort in the higher temperatures expected in our region over the building's lifetime.

Pathway to Net Positive

The broader UBC Resiliency Initiative will develop principles, objectives and metrics to guide adaptation in buildings and landscapes and address policies and guidelines that respond to risk across different scales – building, neighbourhood, campus and region. UBC will partner with regional partners including Metro Vancouver and the City of Vancouver to coordinate strategies.

Climate adaptation actions can provide multiple or synergistic benefits. For example, improved building envelopes can have multiple benefits, including reduced thermal heat transfer, reduced energy costs, reduced GHG emissions and improved thermal comfort. However, this must be balanced with the potential for increased cooling needs in future warmer temperatures resulting from these tight building envelopes.

Adaptation actions intersect with other components, including water and energy. For example, water conservation is a climate adaptation strategy that helps to reduce impacts from hotter, drier weather in future summers. For buildings, design measures such as shading, orientation, glazing and ventilation help to reduce energy demands and provide thermal comfort in hotter, drier summers.

As we make investments in our buildings, it is imperative that our designs, retrofits, operations and maintenance respond to adaptation needs. The cost of no action, both from a future retrofit and public safety perspective, could be much higher than proactively planning infrastructure to be resilient to future climate change impacts.

¹⁶ [Metro Vancouver. Climate Projections for Metro Vancouver \(2016\).](#)

Earth Sciences Building shades and overhang provide shading from the morning sun

ARCHITECT: PERKINS+WILL
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Key Directions

UBC will ensure buildings and landscapes adapt to a changing climate by using the most up-to-date climate data to guide building design and retrofits. Priority actions focus on a review of best practice for adaptation and identifying and conducting vulnerability assessments of infrastructure, including buildings, landscapes and stormwater infrastructure. GBAP actions will be integrated with an emerging campus Resiliency Initiative, when available, which will develop principles, objectives and metrics to guide adaptation in buildings and landscapes. Additional guidance in the water and energy components sections address specific approaches to climate adaptation.

FIVE-YEAR IMPLEMENTATION PLAN — SHORT-TERM PRIORITY ACTIONS

- Review current research and best practices for climate adaptation strategies in buildings.
- Identify climate adaptation research opportunities for buildings and landscapes on a local, regional and global scale.
- Conduct vulnerability assessments of campus buildings, landscapes and infrastructure at periodic intervals.
- Integrate early guidance on climate adaptation measures into project design briefs.
- 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.).
- Incorporate aspects into building and landscape designs to serve campus-wide emergency response preparedness in coordination with key departments, including Infrastructure Development and Risk Management Services.
- Update GBAP once the Resiliency Initiative is adopted.

TARGETS AND INDICATORS

Targets and indicators will be developed based on foundational studies and data gathering identified in the GBAP.