

Sustainability and Climate Action

The project is striving to exemplify the principles of sustainable design and demonstrate leadership in response to climate change. The City of Kelowna and UBC are committed to reducing emissions from buildings both from operations and upfront construction. To guide design decision making the team set clear performance targets to respond to these climate and sustainability commitments, with a clear emphasis on planning for the future.

The design approach is rooted in passive principles to minimize both impact and energy needed to heat and cool the building. A passive approach optimizes conditions inherent in site and climate through the architecture, so only a minimum of energy is needed to run supporting active systems.

Optimized active systems reduce reliance on resources to deliver energy, water, and air to occupants.

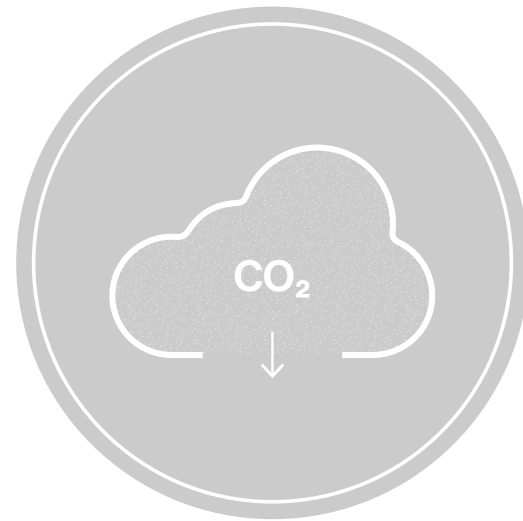
Project Performance targets:

BC Energy Step Code 3

LEED Gold

Greenhouse Gas Emissions target: TBD

Aggressive performance targets demand an integrated approach and the design strategies described rely on one another to contribute to overall performance.



01 Low carbon concrete

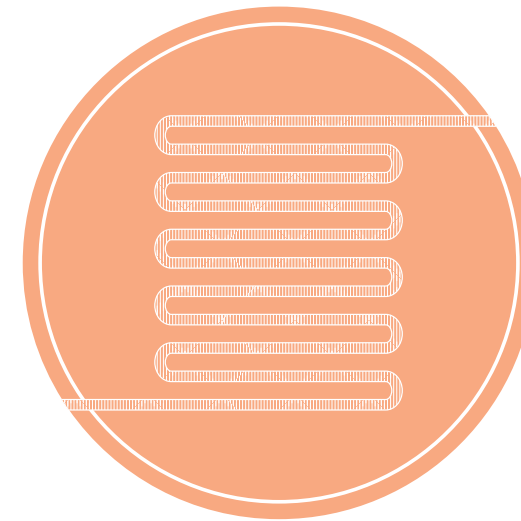
A combination of supplementary cementitious materials (SCMs), recycled sand/aggregates and sequestering CO2 into concrete during mixing – provide enhanced concrete strength whilst significantly lowering the carbon footprint associated with traditional cement.



02 Step Code 3 (TEDl)

An efficient envelope supports efficient active systems. The BC Energy Step Code demands a very efficient envelope system with good air tightness to minimize heat loss and optimize ventilation. The project is optimizing the window to wall ratio and managing solar heat gain with shading, balanced with consideration for good daylight and ventilation. High R-value and minimized thermal bridging will build the foundation for lowered energy demand associated with heating, cooling, and ventilation.

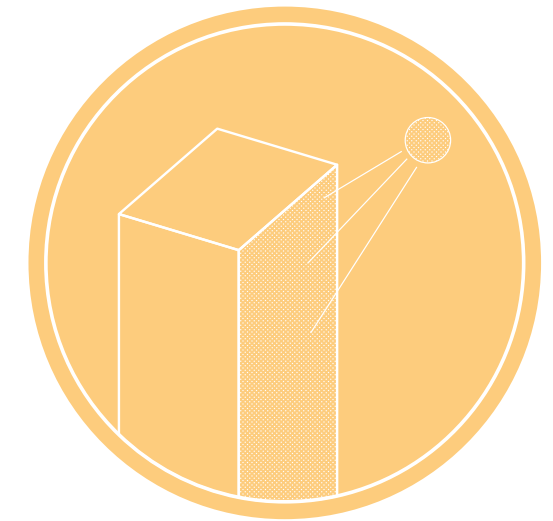
Design compliance with Step Code 3 requirements for Thermal Energy Use Intensity (TEUI) and Thermal Energy Demand Intensity (TEDl).



03 Regenerative Resource Centre (L11)

The mechanical room on Level 11 is strategically located in between the residential tower and the academic podium so thermal energy and water can be exchanged between the two spaces and deliver preheated air from the solar wall to the corridors.

1. Heat generated by academic cooling will be recovered for the residential heating system
2. Heat generated from residential showers drains will be recovered for the academic heating system
3. Water generated from residential showers can be recovered, treated, and reused in the academic areas for irrigation or toilet flushing.
4. A simple connection between the ventilation system and the solar wall is enabled to deliver preheat to residential corridors.



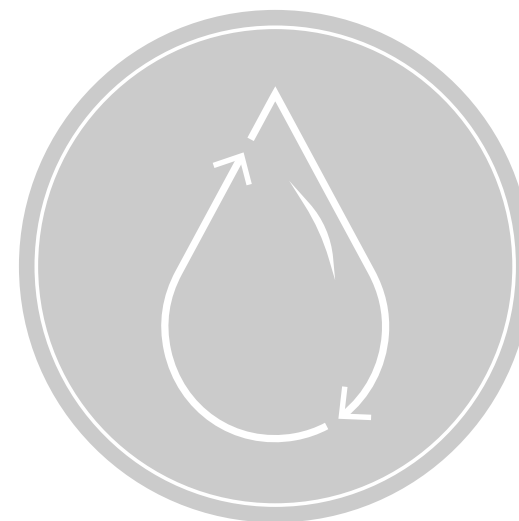
04 Solar wall on the South facade

A Solar Wall system is incorporated on the south façade to preheat ventilation air passively during winter months. It is especially effective in cold and sunny climates. The Solar Wall will preheat outdoor air before it is delivered to corridors in the residential tower.



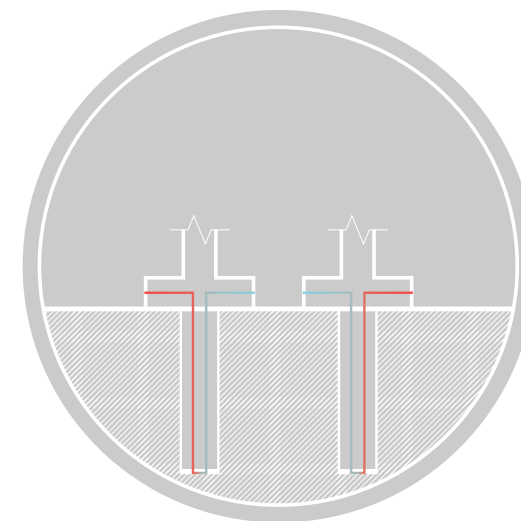
05 Shower Drain Water Heat Recovery

The residential tower will use large quantities of hot water which increases both energy demand and carbon emissions. Gravity will drain warm water from showers to the regenerative resource centre on the 11th floor. The Piranha wastewater heat recovery system from Sharc Energy Systems is proposed as a suitable unit for heat recovery. The system consists of a self-contained heat pump, holding tank and heat exchanger that extracts thermal energy from the warm shower drain water to preheat incoming cold water.



06 Greywater Reuse

Shower drain water is the least contaminated and the simplest water to treat and reuse. Water is being collected for heat recovery via the Piranha system which will be available for treatment and reuse after the heat is recovered. The greywater recycling system is located adjacent to the Piranha unit and uses biological treatment and chemical dosing to purify the water to a safe standard where it can be reused. An estimated potable water savings of 5,000m3 per/year is expected along with a savings for both potable water use costs and sanitary water costs.



07 Ground Source Heat Exchange

The project is considering hydronic heating and cooling by integrating a ground-source heat exchange system into the structural piles being drilled as part of the building foundation. This geophile solution is great fit given the wet soil conditions in downtown Kelowna and can take advantage of the piling already required for structure below the parkade. The geophiles can provide 20-30% of thermal energy needs for the academic podium, with further opportunities to exchange surplus energy with the residential tower.



08 Green Building Certification

The team is using the LEED v4 Building Design and Construction rating system strategically to evaluate performance as design progresses where applicable and verify performance upon completion via third party certification. The preliminary scorecard shows a minimum of 60 points, to earn Gold certification.

ATTACHMENT C

This forms part of application
DP21-0285

Planner Initials **TA**

City of Kelowna
DEVELOPMENT PLANNING

UBC PROPERTIES TRUST Olson Kundig



PV SAIL

SOLAR WALL

NATURAL VENTILATION

NATURAL VENTILATION

FACADE DESIGNED TO REDUCE RAD. BY 50% IN SUMMER

HEAT EXCHANGE BETWEEN RES. & ACADEMIC

PV

NATURAL VENTILATION

MASS TIMBER



Olson Kundig

UBC PROPERTIES TRUST



SUSTAINABILITY STRATEGIES

UBCO DOWNTOWN KELOWNA

MAY 30TH, 2022



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Seal

Consultants

ARCHITECTURAL:
HOMA Architecture + Design
CIVIL:
ARLIN & MARTIN CONSULTANTS LTD.
LANDSCAPE ARCHITECT:
DIALOG
LEED:
HOMA Architecture + Design
FACADE:
OLSON KUNIG

Key plan

Issued for

1 2021/12/09 Development Permit
3 2022/06/06 DP Revision

Project title

UBCO Downtown Kelowna

Client
UBC Properties Trust

Site address
550 Doyle Avenue, Kelowna BC (Residential)
1395 Saint Pauls St, Kelowna BC (Academic)

Sheet title

LEED CHECKLIST

Date Printed 6/6/2022 4:40:13
Sheet number PMJ/sion number 3

A105

LEED V4 PROJECT SCORECARD

PROJECT NAME: UBC Okanagan Downtown Kelowna
DATE: 3-Jun-22
CERTIFICATION LEVEL: Gold

Y	?	N				
1			Credit	Integrative Process		1
11	3	17	Location and Transportation			16
		16	LTc1	LEED for Neighborhood Development Location		16
1			LTc2	Sensitive Land Protection		1
		1	LTc3	High Priority Site		2
4	1		LTc4	Surrounding Density and Diverse Uses		5
4	1		LTc5	Access to Quality Transit		5
1			LTc6	Bicycle Facilities		1
	1		LTc7	Reduced Parking Footprint		1
1			LTc8	Green Vehicles		1
3	2	4	Sustainable Sites			10
Y			SSp1	Construction Activity Pollution Prevention		Required
1			SSc1	Site Assessment		1
	1	1	SSc2	Site Development - Protect or Restore Habitat		2
	1		SSc3	Open Space		1
		3	SSc4	Rainwater Management		3
1			SSc5	Heat Island Reduction		2
1			SSc6	Light Pollution Reduction		1
5	4	2	Water Efficiency			11
Y			WEp1	Outdoor Water Use Reduction		Required
Y			WEp2	Indoor Water Use Reduction		Required
Y			WEp3	Building-Level Water Metering		Required
1	1		WEc1	Outdoor Water Use Reduction		2
3	3		WEc2	Indoor Water Use Reduction		6
		2	WEc3	Cooling Tower Water Use		2
1			WEc4	Water Metering		1
14	19		Energy and Atmosphere			33
Y			EAp1	Fundamental Commissioning and Verification		Required
Y			EAp2	Minimum Energy Performance		Required
Y			EAp3	Building-Level Energy Metering		Required
Y			EAp4	Fundamental Refrigerant Management		Required
3	3		EAc1	Enhanced Commissioning		6
10	8		EAc2	Optimize Energy Performance		18
1			EAc3	Advanced Energy Metering		1
	2		EAc4	Demand Response		2
	3		EAc5	Renewable Energy Production		3
	1		EAc6	Enhanced Refrigerant Management		1
	2		EAc7	Green Power and Carbon Offsets		2

8	3	2	Materials and Resources			13
Y			MRp1	Storage and Collection of Recyclables		Required
Y			MRp2	Construction and Demolition Waste Management Planning		Required
3		2	MRc1	Building Life-Cycle Impact Reduction		5
1	1		MRc2	Building Product Disclosure - Environmental Product Declarations		2
1	1		MRc3	Building Product Disclosure - Sourcing of Raw Materials		2
1	1		MRc4	Building Product Disclosure - Material Ingredients		2
2			MRc5	Construction and Demolition Waste Management		2

9	5	1	Indoor Environmental Quality			16
Y			EQp1	Minimum Indoor Air Quality Performance		Required
Y			EQp2	Environmental Tobacco Smoke Control		Required
2			EQc1	Enhanced Indoor Air Quality Strategies		2
3			EQc2	Low-Emitting Materials		3
1			EQc3	Construction Indoor Air Quality Management Plan		1
1	1		EQc4	Indoor Air Quality Assessment		2
1			EQc5	Thermal Comfort		1
1	1		EQc6	Interior Lighting		2
	2		EQc7	Daylight		3
	1		EQc8	Quality Views		1
		1	EQc9	Acoustic Performance		1

6			Innovation and Design			6
1			Credit	Education Program		1
1			Credit	Social Equity Within the Project Team		1
1			Credit	Green Cleaning Policy		1
1			Credit	Assessment & Planning for Resilience		1
1			Credit	Bird Collision Deterrence		1
1			Credit	LEED Accredited Professional		1

4			Regional Priority			4
1			Credit	Regional Priority Credit 1: Surrounding Density and Diverse Uses (4 pts)		1
1			Credit	Regional Priority Credit 2: Access to Quality Transit (3 pts)		1
1			Credit	Regional Priority Credit 3: Optimize Energy Performance (10 pts)		1
1			Credit	Regional Priority Credit 4: Light Pollution Reduction (1 pts)		1

Y	?	N				
61	36	26	TOTAL SCORE			Possible Points: 110

Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110