UBC Beaty Museum Extension: Preliminary GOLD-level Scorecard
LEED v4 BD+C: NEW CONSTRUCTION

Date Issued: March 24, 2022

USGBC Project No.: 1000154872

Documented ++	Targeted +	High Potential ?	Low Potential $	NO X
	63	19	14	14

Project Total

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

	1					IPc1	Integrative Process

Integrative Process — Possible Points: 1

	11	1	2	2			
				-		LTc1	LEED for Neighborhood Development Location
	1				#	LTc2	Sensitive Land Protection
				2		LTc3	High Priority Site
	5				#	LTc4	Surrounding Density and Diverse Uses
	5				#	LTc5	Access to Quality Transit
		1			#	LTc6	Bicycle Facilities
			1			LTc7	Reduced Parking Footprint
			1			LTc8	Green Vehicles

Location + Transportation — Possible Points: 16

	5	2	2	1			
	Y					SSp1	Construction Activity Pollution Prevention
	1				#	SSc1	Site Assessment
		2			#	SSc2	Site Development: Protect or Restore Habitat
	1					SSc3	Open Space
			2	1	#	SSc4	Rainwater Management
	2					SSc5	Heat Island Reduction
	1				#	SSc6	Light Pollution Reduction

Sustainable Sites — Possible Points: 10

	5	3		3			
	Y					WEp1	Outdoor Water Use Reduction: 30%
	Y					WEp2	Indoor Water Use Reduction: 20%
	Y					WEp3	Building-Level Water Metering
	1			1	#	WEc1	Outdoor Water Use Reduction
	3	1		2	#	WEc2	Indoor Water Use Reduction
		2			#	WEc3	Cooling Tower Water Use
	1					WEc4	Water Metering

Water Efficiency — Possible Points: 11

	15	10	5	3			
	Y					EAp1	Fundamental Commissioning and Verification
	Y					EAp2	Minimum Energy Performance
	Y					EAp3	Building-Level Energy Metering
	Y					EAp4	Fundamental Refrigerant Management
	4	2			#	EAc1	Enhanced Commissioning
	10	5	3		#	EAc2	Optimize Energy Performance:
	1				#	EAc3	Advanced Energy Metering
		1		1	#	EAc4	Demand Response
		1	2		#	EAc5	Renewable Energy Production
		1			#	EAc6	Enhanced Refrigerant Management
				2		EAc7	Green Power and Carbon Offsets

Energy + Atmosphere — Possible Points: 33

	7	1		5			
	Y					MRp1	Storage & Collection of Recyclables
	Y					MRp2	Construction and Demolition Waste Management Planning
	3			2	#	MRc1	Building Life-Cycle Impact Reduction
	1			1		MRc2	Building Product Disclosure & Optimization: Environmental Product Declarations
	1			1	#	MRc3	Building Product Disclosure & Optimization: Sourcing of Raw Materials
		1		1		MRc4	Building Product Disclosure & Optimization: Material Ingredients
	2				#	MRc5	Construction & Demolition Waste Management

Materials + Resources — Possible Points: 13

	11		5				
	Y					IEQp1	Minimum IAQ Performance
	Y					IEQp2	Environmental Tobacco Smoke (ETS) Control
	2				#	IEQc1	Enhanced Air Quality Strategies
	3				#	IEQc2	Low-Emitting Materials
	1				#	IEQc3	Construction IAQ Management Plan
	2				#	IEQc4	Indoor Air Quality Assessment
	1				#	IEQc5	Thermal Comfort
	1		1			IEQc6	Interior Lighting
			3			IEQc7	Daylight
	1					IEQc8	Quality Views
			1			IEQc9	Acoustic Performance

Indoor Environmental Quality — Possible Points: 16

	6						
	1				#	IDc1.1	Innovation: Occupant Comfort Survey
	1				#	IDc1.2	Innovation Pilot: Bird Collision Deterrence
	1				#	IDc1.3	Innovation Pilot: All Gender Washrooms
	1				#	IDc1.4	Exemplary Performance: Access to Quality Transit
	1				#	IDc1.5	Exemplary Performance: Construction Waste Management
	1				#	IDc2	LEED™ Accredited Professional

Innovation + Design Process — Possible Points: 6

	2	2					
	1				#	RPc1.1	Regional Priority: Optimize Energy (10 pts)
		1			#	RPc1.2	Regional Priority: Enhanced Commissioning (5 pts)
	1				#	RPc1.3	Regional Priority: Building Life-Cycle Impact Reduction (3 pts)
		1			#	RPc1.4	Regional Priority: Rainwater Management - 2 Pts

Regional Priority Credits — Possible Points: 4

Energy & Carbon Management Pillar

Water Management Pillar

Materiality Pillar

Landscape and Ecology Pillar

= Credit Tied to UBC Implementation Guide

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LEED v4 BD+C: New Construction

Date Issued: March 24, 2022

USGBC Project No.: 1000154872

Project occupancy : assumed 70 staff and 50 visitors, to be confirmed as the project progresses.

Documented	Targeted	High Potential	Low Potential	No
++	+	?	$	X
	63	19	14	14

Project Total

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

Preliminary Information				Possible Points:		RESPONSIBILITY	LEED Requirement	Notes	Actions
	Y			Form 1	Minimum Project Requirements	Y	Sustainability Consultant	Comply with all the LEED Minimum Project Requirements (MPR).		
	Y			Form 2	Project Summary Details	Y	Sustainability Consultant	Building Area and GSF values; Site Characteristics; Energy & Water Sources; Budget & Historic Project Data		
	Y			Form 3	Occupant & Usage Data	Y	Sustainability Consultant	Space Usage; Occupant Information		
	Y			Form 4	Schedule & Overview Documents	Y	Sustainability Consultant	Schedule; Overview Documents; Narratives		

	1			
++	+	?	-	--

Integrative Process			Possible Points:	1	RESPONSIBILITY	LEED Requirement	Notes	Actions
	1	IPc1	Integrative Process	1	Sustainability Consultant	Perform preliminary energy model and water budget before the completion of SD and document in OPR & BOD. Beginning in pre-design and continuing throughout the design phases, identify and use opportunities to achieve synergies across disciplines and building systems described below. Use the analyses to inform the owner's project requirements (OPR), basis of design (BOD), design documents, and construction documents. ENERGY-RELATED SYSTEMS DISCOVERY: Perform a preliminary "simple box" energy modeling analysis before the completion of schematic design that explores how to reduce energy loads in the building and accomplish related sustainability goals by questioning default assumptions. Assess at least two potential strategies associated with each of the following: -Site conditions. Assess shading, exterior lighting, hardscape, landscaping, and adjacent site conditions.	**LEED PM 11/19/2021:** Item noted as required by UBC LEED Implementation Guide	

	11	1	2	2
++	+	?	-	--

Location +Transportation			Possible Points:	16	RESPONSIBILITY	LEED Requirement	Notes	Actions
		LTc1	LEED for Neighborhood Development Location	1-16	Owner / Architect	Locate the project in within the boundary of a development certified under LEED for Neighborhood Development (Stage 2 or Stage 3 under the Pilot or 2009 rating systems, Certified Plan or Certified Project under the LEED v4 rating system).	Not Targeted	
	1	LTc2	Sensitive Land Protection	1	Civil	OPTION 1. Locate the development footprint on land that has been previously developed.	**LEED PM 11/19/2021::** Item noted as required by UBC LEED Implementation Guide	
		LTc3	High Priority Site	2	Owner / Civil / Environmental	OPTION 1. HISTORIC DISTRICT Locate the project on an infill location in a historic district.	Not Targeted	
	5	LTc4	Surrounding Density and Diverse Uses	1-5	Architect	OPTION 1. SURROUNDING DENSITY Locate on a site whose surrounding existing density within a ¼-mile [400-meter] radius of the project boundary meets the values in Table 1. Use either the "separate residential and nonresidential densities" or the "combined density" values. DU = dwelling unit; FAR = floor-area ratio. AND/OR OPTION 2. DIVERSE USES Construct or renovate a building or a space within a building such that the building's main entrance is within a ½-mile (800-meter) walking distance of the main entrance of four to	**LEED PM 12/9/2021:** Density calcs and diverse uses provided in UBC LEED Implementation guide Appendix C **LEED PM 11/19/2021:** 5 pts noted as required by UBC LEED Implementation Guide	
			Surr Density : 5,050m2/hac w/ 17.5 res units/hac, 0.5 FAR nonres	2				
			Surr Density : 8,035m2/hac w/ 30 res units/hac, 0.8 FAR nonres	3				
			Diverse Uses within 800-m walking distance: 4	1				
			Diverse Uses within 800-m walking distance: 8	2				
	5	LTc5	Access to Quality Transit	1-5	Architect	Locate any functional entry of the project within a ¼-mile (400-meter) walking distance of existing or planned bus, streetcar, or informal transit stops, or within a ½-mile (800-meter) walking distance of existing or planned bus rapid transit stops, light or heavy rail stations, commuter rail stations or ferry terminals. The transit service at those stops and stations in aggregate must meet the minimums listed in Tables 1 and 2. Planned stops and stations may count if they are sited, funded, and under construction by the date of the certificate of occupancy and are complete within 24 months of that date. Both weekday and weekend trip minimums must be met. Qualifying transit routes must have paired route service (service in opposite directions).	**ARCH 12/9/2021:** Building primary entrance is likely through the existing building. One entrance is being relocated to the new building. **LEED PM 12/9/2021:** Transit schedules and trip counts provided in UBC LEED Implementation guide Appendix D	ARCH to confirm primary entrance for the project
			72 weekday, 42 weekend trips	1				
			144 weekday, 108 weekend trips	3				
			360 weekday, 216 weekend trips	5				
		LTc6	Bicycle Facilities	1	Architect	BICYCLE NETWORK Design or locate the project such that a functional entry and/or bicycle storage is within a 200-yard (180-meter) walking distance or bicycling distance from a bicycle network that connects to at least one of the following: at least 10 diverse uses (see Appendix 1); a school or employment center, if the project total floor area is 50% or more residential; or	**ARCH 12/9/2021:** 20 Bicycle spaces are proposed in the building additional visitor spaces can be provided as well however shower facilities are being provided in adjacent building **LEED PM 12/9/2021:** Based on 70 staff and 50 visitor counts, 4 Class A and 4 Class B stalls, 1 shower required. Secured bike storage for 33 bikes on L1	
		LTc7	Reduced Parking Footprint	1	Architect	Do not exceed the minimum local code requirements for parking capacity. Provide parking capacity that is a percentage reduction below the base ratios recommended by the Parking Consultants Council, as shown in the Institute of Transportation Engineers' Transportation Planning Handbook, 3rd edition, Tables 18-2 through 18-4. CASE 1. BASELINE LOCATION	**ARCH 12/9/2021:** No additional parking is being added. Some spaces in existing parking lot will be re-labeled for staff. **LEED PM 11/19/2021:** Staying away from Parking-related credits for now due to campus complexities.	
		LTc8	Green Vehicles	1	Architect	Designate 5% of all parking spaces used by the project as preferred parking for green vehicles. Clearly identify and enforce for sole use by green vehicles. Distribute preferred parking spaces proportionally among various parking sections (e.g. between short-term and long-term spaces).	**LEED PM 11/19/2021:** Staying away from Parking-related credits for now due to campus complexities.	

5	2	2	1
++	+	?	-	--

Sustainable Sites — Possible Points: 10

	Y				SSp1	Construction Activity Pollution Prevention	Y
	1				SSc1	Site Assessment	1
		2			SSc2	Site Development: Protect or Restore Habitat	1-2
						On-Site Restoration	2
						Financial Support	1
	1				SSc3	Open Space	1
			2	1	SSc4	Rainwater Management	2-3
						95th Percentile	2
						98th Percentile or Zero Lot Line or Natural Land Cover Conditions	3
	2				SSc5	Heat Island Reduction	1-2
						Nonroof and Roof	2
						Parking Under Cover	1
	1				SSc6	Light Pollution Reduction	1

RESPONSIBILITY	LEED Requirement	Notes	Actions
Civil Engineer / GC	Create and implement an erosion and sedimentation control plan for all construction activities associated with the project. The plan must conform to the erosion and sedimentation requirements of the 2012 U.S. Environmental Protection Agency (EPA) Construction General Permit (CGP) or local equivalent, whichever is more stringent. Projects must apply the		
Civil / Environmental	Complete and document a site survey or assessment *1 that includes the following information: Topography. Contour mapping, unique topographic features, slope stability risks. Hydrology. Flood hazard areas, delineated wetlands, lakes, streams, shorelines, rainwater collection and reuse opportunities, TR-55 initial water storage capacity of the site (or local equivalent for projects outside the U.S.). Climate. Solar exposure, heat island effect potential, seasonal sun angles, prevailing winds, monthly precipitation and temperature ranges. Vegetation. Primary vegetation types, greenfield area, significant tree mapping, threatened or endangered species, unique habitat, invasive plant species. Soils. Natural Resources Conservation Service soils delineation, U.S. Department of Agriculture prime farmland, healthy soils, previous development, disturbed soils (local equivalent standards may be used for projects outside the U.S.). Human use. Views, adjacent transportation infrastructure, adjacent properties, construction materials with existing recycle or reuse potential.	**LEED PM 11/19/2021:** Item noted as required by UBC LEED Implementation Guide	
Landscape Architect / Owner	Preserve and protect from all development and construction activity 40% of the greenfield area on the site (if such areas exist). AND OPTION 1. ON-SITE RESTORATION (2 POINTS EXCEPT HEALTHCARE, 1 POINT HEALTHCARE) Using native or adapted vegetation, restore 30% (including the building footprint) of all portions of the site identified as previously disturbed. Projects that achieve a density of 1.5 floor-area ratio may include vegetated roof surfaces in this calculation if the plants are native or adapted, provide habitat, and promote biodiversity. Restore all disturbed or compacted soils that will be revegetated within the project's development footprint to meet the following requirements *2 : Soils (imported and in-situ) must be reused for functions comparable to their original function.	**LANDS 12/9/2021:** Landscape-credit is likely less achievable and should remain under investigation **LEED PM 11/19/2021:** 2 pts noted as required by UBC LEED Implementation Guide. Preliminary analysis shows insufficient space on site. To be confirmed.	
Landscape Architect	Provide outdoor space greater than or equal to 30% of the total site area (including building footprint). A minimum of 25% of that outdoor space must be vegetated (turf grass does not count as vegetation) or have overhead vegetated canopy. The outdoor space must be physically accessible and be one or more of the following:	**LANDS 12/9/2021:** Open space should be achievable depending LEED project site boundary. **LEED PM 11/19/2021:** Should be achievable given the relationship	LANDS to confirm available open and vegetated spaces
Civil / Landscape Architect / Mechanical Engineer	OPTION 1. PERCENTILE OF RAINFALL EVENTS PATH 1. 95TH PERCENTILE In a manner best replicating natural site hydrology processes, manage on site the runoff from the developed site for the 95th percentile of regional or local rainfall events using low-impact development (LID) and green infrastructure. Use daily rainfall data and the methodology in the U.S. Environmental Protection Agency (EPA) Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act to determine the 95th percentile amount.	**LEED PM 11/19/2021:**2 pts noted as required by UBC LEED Implementation Guide. Need confirmation from the Civil consultant	
Architect / Landscape Architect	Choose one of the following options: OPTION 1. NONROOF AND ROOF Alternatively, an SRI and SR weighted average approach may be used to calculate compliance. Use any combination of the following strategies. Nonroof measures Use the existing plant material or install plants that provide shade over paving areas (including playgrounds) on the site within 10 years of planting. Install vegetated planters. Plants	**UBC 12/9/2021:** TPO roof can be provided, lesser embodied carbon value for this material **LEED PM 11/19/2021:** Credit achievable based on hardscape and roofing material selection.	
Landscape Architect / Lighting Designer / Owner	Meet up light and light trespass requirements, using either the backlight-uplight-glare (BUG) method (Option 1) or the calculation method (Option 2). Projects may use different options for uplight and light trespass. Meet these requirements for all exterior luminaires located inside the project boundary (except those listed under "Exemptions"), based on the following:	**LEED PM 11/19/2021::** Item noted as required by UBC LEED Implementation Guide	

5	3		3
++	+	?	-	--

Water Efficiency — Possible Points: 11

	Y				WEp1	Outdoor Water Use Reduction: 30%	Y
	Y				WEp2	Indoor Water Use Reduction: 20%	Y
	Y				WEp3	Building-Level Water Metering	Y
	1			1	WEc1	Outdoor Water Use Reduction	1-2
						50% Reduction	1
						100% Reduction / No Potable Water	2
	3	1		2	WEc2	Indoor Water Use Reduction	1-6
						25% Reduction	1
						30% Reduction	2
						35% Reduction	3
						40% Reduction	4
						45% Reduction	5
						50% Reduction	6
		2			WEc3	Cooling Tower Water Use	1-2
						Water Analysis & Concentration Calculation	1
						10+ cycles or 20% non-potable water use	2
	1				WEc4	Water Metering	1

RESPONSIBILITY	LEED Requirement	Notes	Actions
Landscape Architect	Reduce outdoor water use through one of the following options. Nonvegetated surfaces, such as permeable or impermeable pavement, should be excluded from landscape area calculations. Athletic fields and playgrounds (if vegetated) and food gardens may be included or excluded at the project team's discretion.	See WEc1	
Mechanical Engineer	BUILDING WATER USE	See WEc2	
Mechanical Engineer	Install permanent water meters that measure the total potable water use for the building and associated grounds. Meter data must be compiled into monthly and annual summaries; meter readings can be manual or automated.	See WEc4	
Landscape Architect / Civil	Reduce outdoor water use through one of the following options. Nonvegetated surfaces, such as permeable or impermeable pavement, should be excluded from landscape area calculations. Athletic fields and playgrounds (if vegetated) and food gardens may be included or excluded at the project team's discretion. OPTION 1. NO IRRIGATION REQUIRED Show that the landscape does not require a permanent irrigation system beyond a maximum two-year establishment period. OR	**LANDS 12/9/2021-** Credit should be attainable through low flow irrigation design. **UBCPT12/9/2021:** Landscape will have limited turf grass.	
Mechanical Engineer	Further reduce fixture and fitting water use from the calculated baseline in WE Prerequisite Indoor Water Use Reduction. Additional potable water savings can be earned above the prerequisite level using alternative water sources. Include fixtures and fittings necessary to meet the needs of the occupants. Some of these fittings and fixtures may be outside the tenant space (for Commercial Interiors) or project boundary (for New Construction). Install equipment within the project scope that meets the minimum requirements in Table 2, 3, 4, or 5 . One point is awarded for meeting all applicable requirements in any one table. All applicable equipment listed in each table must meet the standard.	**LEED PM 1/17/2022:** >35% savings anticipated with following flowrates: WC - 4.2 / 3 LPF; Lavs - 1.3 LPM; Kitchen - 5.7 LPM; Showers - 5.7 LPM **ARCH 12/9/2021-** project will have gender-neutral washrooms. **MECH 12/9/2021-** Flow flow fixtures seem reasonable based on other UBC projects	
Mechanical Engineer	For cooling towers and evaporative condensers, conduct a one-time potable water analysis, in order to optimize cooling tower cycles. Measure at least the five control parameters listed in Table 1. ppm = parts per million; µS/cm = micro siemens per centimeter Calculate the number of cooling tower cycles by dividing the maximum allowed concentration level of each parameter by the actual concentration level of each parameter found in the potable makeup water. Limit cooling tower cycles to avoid exceeding maximum values for any of these parameters.	**LEED PM 2/17/2022:** ACP criteria less likely since project < 150,000 sqft **MECH 12/9/2021:** No Cooling Tower proposed. Will participate in reviewing and finding alignment between ASHRAE systems 7 and 8	Baseline systems for ACP to be determined
Mechanical Engineer	Install permanent water meters for two or more of the following water subsystems, as applicable to the project: Irrigation. Meter water systems serving at least 80% of the irrigated landscaped area. Calculate the percentage of irrigated landscape area served as the total metered irrigated landscape area divided by the total irrigated landscape area. Landscape areas fully covered with xeriscaping or native vegetation that requires no routine irrigation may be excluded from the calculation. Indoor plumbing fixtures and fittings. Meter water systems serving at least 80% of the indoor fixtures and fitting described in WE Prerequisite Indoor Water Use Reduction, either	**MECH 12/9/2021:** Irrigation and DHW will be sub metered most likely. **LEED PM 11/19/2021:** Should be straightforward to achieve	Mech. to clarify which water end uses will be metered

	15	10	5	3
++	+	?	-	--
	Y			
	Y			
	Y			
	Y			
	4	2		
	10	5	3	
	1			
		1		1
		1	2	
		1		
				2

Energy + Atmosphere			Possible Points:	33	RESPONSIBILITY	LEED Requirement	Notes	Actions
EAp1	Fundamental Commissioning and Verification			Y	Owner / Commissioning Agent	COMMISSIONING PROCESS SCOPE Complete the following commissioning (Cx) process activities for mechanical, electrical, plumbing, and renewable energy systems and assemblies, in accordance with ASHRAE	See EAc1	
EAp2	Minimum Energy Performance			Y	Energy Modeler	OPTION 1. WHOLE-BUILDING ENERGY SIMULATION	See EAc2	
EAp3	Building-Level Energy Metering			Y	Mechanical + Electrical Engineers	Install new or use existing building-level energy meters, or submeters that can be aggregated to provide building-level data representing total building energy consumption (electricity, natural gas, chilled water, steam, fuel oil, propane, biomass, etc.). Utility-owned meters capable of aggregating building-level resource use are acceptable.	See EAc3	
EAp4	Fundamental Refrigerant Management			Y	Mechanical Engineer	Do not use chlorofluorocarbon (CFC)-based refrigerants in new heating, ventilating, air-conditioning, and refrigeration (HVAC&R) systems. When reusing existing HVAC&R equipment, complete a comprehensive CFC phase-out conversion before project completion. Phase-out plans extending beyond the project completion date will be considered on	See EAc6	
EAc1	Enhanced Commissioning			2-6	Owner / Commissioning Agent	Implement, or have in place a contract to implement, the following commissioning process activities in addition to those required under EA Prerequisite Fundamental Commissioning and Verification. Commissioning authority The CxA must have documented commissioning process experience on at least two building projects with a similar scope of work. The experience must extend from early design phase through at least 10 months of occupancy; The CxA may be a qualified employee of the owner, an independent consultant, or a disinterested subcontractor of the design team.	**UBCPT12/9/2021:** Alberto of Kane Consulting is doing commissioning. **LEED PM 11/19/2021:** 4 pts noted as required by UBC LEED Implementation Guide	
			Enhanced Cx	3				
			Enhanced & Monitoring-Based Cx	4				
			Envelope Cx	2				
EAc2	Optimize Energy Performance			1-18	Energy Modeler	Establish an energy performance target no later than the schematic design phase. The target must be established as kBtu per square foot-year (kW per square meter-year) of source energy use. Choose one of the options below. OPTION 1. WHOLE-BUILDING ENERGY SIMULATION Analyze efficiency measures during the design process and account for the results in design decision making. Use energy simulation of efficiency opportunities, past energy simulation analyses for similar buildings, or published data (e.g., Advanced Energy Design Guides) from analyses for similar buildings. Analyze efficiency measures, focusing on load reduction and HVAC-related strategies (passive measures are acceptable) appropriate for the facility. Project potential energy savings and holistic project cost implications related to all affected systems. Project teams pursuing the Integrative Process credit must complete the basic energy analysis for that credit before conducting the energy simulation. Follow the criteria in EA Prerequisite Minimum Energy Performance to demonstrate a percentage improvement in the proposed building performance rating compared with the baseline. Points are awarded according to Table 1. OR OPTION 2. PRESCRIPTIVE COMPLIANCE: ASHRAE ADVANCED ENERGY DESIGN GUIDE (1–6 POINTS)	**LEED PM 11/19/2021:** 10 pts noted as required by UBC LEED Implementation Guide	
	6% Reduction	1	24% Reduction	10				
	8% Reduction	2	26% Reduction	11				
	10% Reduction	3	29% Reduction	12				
	12% Reduction	4	32% Reduction	13				
	14% Reduction	5	35% Reduction	14				
	16% Reduction	6	38% Reduction	15				
	18% Reduction	7	42% Reduction	16				
	20% Reduction	8	46% Reduction	17				
	22% Reduction	9	50% Reduction	18				
EAc3	Advanced Energy Metering			1	Mechanical Engineer	Install advanced energy metering for the following: all whole-building energy sources used by the building; and any individual energy end uses that represent 10% or more of the total annual consumption of the building. The advanced energy metering must have the following characteristics.	**LEED PM 11/19/2021:** Item noted as required by UBC LEED Implementation Guide	
EAc4	Demand Response			1-2	Mechanical Engineer	Design building and equipment for participation in demand response programs through load shedding or shifting. On-site electricity generation does not meet the intent of this credit. CASE 1. DEMAND RESPONSE PROGRAM AVAILABLE Participate in an existing demand response (DR) program and complete the following activities. Design a system with the capability for real-time, fully-automated DR based on external initiation by a DR Program Provider. Semi-automated DR may be utilized in practice. Enroll in a minimum one-year DR participation amount contractual commitment with a qualified DR program provider, with the intention of multiyear renewal, for at least 10% of the	**MECH 12/9/2021:** Demand response should be a coordinated effort between Mech and Elec. It should be achievable at a relatively low upfront capital cost. **LEED PM 11/19/2021:** Item noted as required by UBC LEED	MECH to confirm if their scope of work includes compliance with this credit
			DR Program Available	2				
			DR Program Not Available	1				
EAc5	Renewable Energy Production			1-3	Owner / PV Designer	Use renewable energy systems to offset building energy costs. Calculate the percentage of renewable energy with the following equation: % renewable energy = Equivalent cost of usable energy produced by the renewable energy system / Total building annual energy cost Use the building's annual energy cost, calculated in EA Prerequisite Minimum Energy Performance, if Option 1 was pursued; otherwise use the U.S. Department of Energy's Commercial Buildings Energy Consumption Survey (CBECS) database to estimate energy use and cost. The use of solar gardens or community renewable energy systems is allowed if both of the following requirements are met. The project owns the system or has signed a lease agreement for a period of at least 10 years.	**LEED PM 11/19/2021:** Item noted as required by UBC LEED Implementation Guide. Relates to biomass portion of DES.	
			1% Renewable Energy	1				
			5% Renewable Energy	2				
			10% Renewable Energy	3				
EAc6	Enhanced Refrigerant Management			1	Mechanical Engineer	OPTION 1. NO REFRIGERANTS OR LOW-IMPACT REFRIGERANTS Do not use refrigerants, or use only refrigerants (naturally occurring or synthetic) that have an ozone depletion potential (ODP) of zero and a global warming potential (GWP) of less than 50. OR	**MECH 12/9/2021:** Main ASHP should meet credit however there is a single dehumidication requirement which may require a split unit and impact credit achievement.	AME to produce refrigerant calculation when required
EAc7	Green Power and Carbon Offsets			1-2	Owner / Sustainability Consultant	Engage in a contract for qualified resources that have come online since January 1, 2005, for a minimum of five years, to be delivered at least annually. The contract must specify the provision of at least 50% or 100% of the project's energy from green power, carbon offsets, or renewable energy certificates (RECs). Green power and RECs must be Green-e Energy certified or the equivalent. [Europe ACP: Green Power] [South America ACP: Green Power] RECs can only be used to mitigate the effects of Scope 2, electricity use.	**LEED PM 11/19/2021:** Credit to be used a s backup option.	
			50%	1				
			100%	2				

++	+	?	-	--
	7	1		5

Materials + Resources		Possible Points:	13	RESPONSIBILITY	LEED Requirement	Notes	Actions
MRp1	Storage and Collection of Recyclables		Y	Architect	Provide dedicated areas accessible to waste haulers and building occupants for the collection and storage of recyclable materials for the entire building. Collection and storage areas may be separate locations. Recyclable materials must include mixed paper, corrugated cardboard, glass, plastics, and metals. Take appropriate measures for the safe collection, storage, and disposal of two of the following: batteries, mercury-containing lamps, and electronic waste.	ARCH 12/9/2021: Waste is being consolidated in the existing building. Discussions have been had concerning the collection and conveyance of materials	
MRp2	Construction and Demolition Waste Management Planning		Y	Contractor	Develop and implement a construction and demolition waste management plan: Establish waste diversion goals for the project by identifying at least five materials (both structural and nonstructural) targeted for diversion. approximate a percentage of the overall project waste that these materials represent. Specify whether materials will be separated or commingled and describe the diversion strategies planned for the project. Describe where the materials will be taken and how the		
MRc1	Building Life-Cycle Impact Reduction		2-5	Architect / Interior Designer / LCA Consultant + Contractor	Demonstrate reduced environmental effects during initial project decision-making by reusing existing building resources or demonstrating a reduction in materials use through life-cycle assessment. Achieve one of the following options. OPTION 1. HISTORIC BUILDING REUSE (5 POINTS) Maintain the existing building structure, envelope, and interior nonstructural elements of a historic building or contributing building in a historic district. To qualify, the building or historic district must be listed or eligible for listing in the local, state, or national register of historic places. Do not demolish any part of a historic building or contributing building in a historic district unless it is deemed structurally unsound or hazardous. For buildings listed locally, approval of any demolition must be granted by the local historic preservation review board. For buildings listed in a state register or the U.S. National Register of Historic Places (or local equivalent for projects outside the U.S.), approval must appear in a programmatic	**UBCPT12/9/2021:** Use of TPO roof over torch-on asphalt roof (for heat island credit) should be rationalized using LCA (leveraging carbon saving to get the measure in). **LEED PM 11/19/2021:** 3 pts noted as required by UBC LEED Implementation Guide. Credit may result in additional scope.	Additional scope for LCA to be resolved
	Historic Building Reuse		5				
	Renovation of Abandoned or Blighted Bldg.		5				
	Building & Material Reuse (25%, 50%, 75%)		2-4				
	Whole-Building Life-Cycle Assessment		3				
MRc2	Building Product Disclosure & Optimization: Environmental Product Declarations		1-2	Architect / Interior Designer / Contractor	Achieve one or more of the options below, for a maximum of 2 points. OPTION 1. ENVIRONMENTAL PRODUCT DECLARATION (EPD) (1 POINT) Use at least 20 different permanently installed products sourced from at least five different manufacturers that meet one of the disclosure criteria below. Product-specific declaration. Products with a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that have at least a cradle to gate scope are valued as one quarter (1/4) of a	LEED PM 12/9/2021: Based on previous project experience, getting 1 point from material EPDs is fairly achievable.	
	Manufacturer EPD		1				
	50% Multi-Attribute Optimization		1				
MRc3	Building Product Disclosure & Optimization: Sourcing of Raw Materials		1-2	Architect / Interior Designer / Contractor	OPTION 1. RAW MATERIAL SOURCE AND EXTRACTION REPORTING (1 POINT) Use at least 20 different permanently installed products from at least five different manufacturers that have publicly released a report from their raw material suppliers which include raw material supplier extraction locations, a commitment to long-term ecologically responsible land use, a commitment to reducing environmental harms from extraction and/or manufacturing processes, and a commitment to meeting applicable standards or programs voluntarily that address responsible sourcing criteria. Products sourced from manufacturers with self-declared reports are valued as one half (1/2) of a product for credit achievement.	**LEED PM 11/19/2021:** 1 pt noted as required by UBC LEED Implementation Guide	
	Manufacturer CSR		1				
	25% Leadership Extraction Practices		1				
MRc4	Building Product Disclosure & Optimization: Material Ingredients		1-2	Architect / Interior Designer / Contractor	OPTION 1. MATERIAL INGREDIENT REPORTING (1 POINT) Use at least 20 different permanently installed products from at least five different manufacturers that use any of the following programs to demonstrate the chemical inventory of the product to at least 0.1% (1000 ppm). Manufacturer Inventory. The manufacturer has published complete content inventory for the product following these guidelines: A publicly available inventory of all ingredients identified by name and Chemical Abstract Service Registration Number (CASRN) Materials defined as trade secret or intellectual property may withhold the name and/or CASRN but must disclose role, amount and hazard screen using either:		
	Manufacturer Material Ingredient Reporting		1				
	25% Material Ingredient Optimization		1				
	25% Product Manufacturer Supply Chain Optimization		1				
MRc5	Construction & Demolition Waste Management		1-2	Contractor	Recycle and/or salvage nonhazardous construction and demolition materials. Calculations can be by weight or volume but must be consistent throughout. Exclude excavated soil, land-clearing debris from calculations. Include materials destined for alternative daily cover (ADC) in the calculations as waste (not diversion). Include wood waste converted to fuel (bio-fuel) in the calculations; other types of waste-to-energy are not considered diversion for this credit. However, for projects that cannot meet credit requirements using reuse and recycling methods, waste-to-energy systems may be considered waste diversion if the European Commission Waste Framework Directive 2008/98/EC and Waste Incineration Directive 2000/76/EC are followed and Waste to Energy facilities meet applicable European Committee	**LEED PM 11/19/2021**: Item noted as required by UBC LEED Implementation Guide	
	Diversion (50%, 75%)		1-2				
	Reduction of Total Waste Material		2				

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	11		5		**Indoor Environmental Quality**	**Possible Points:**	**16**	**RESPONSIBILITY**	**LEED Requirement**	**Notes**	**Actions**
	Y				IEQp1	Minimum IAQ Performance	Y	Mechanical Engineer	Meet the requirements for both ventilation and monitoring.	**MECH 12/9/2021:** Airflows will be monitored	AME to confirm monitoring of OA when available
	Y				IEQp2	Environmental Tobacco Smoke (ETS) Control	Y	Owner / Architect / Interior Designer	Prohibit smoking inside the building. Prohibit smoking outside the building except in designated smoking areas located at least 25 feet (7.5 meters) from all entries, outdoor air intakes, and operable windows. Also prohibit smoking outside the property line in spaces used for business purposes. If the requirement to prohibit smoking within 25 feet (7.5 meters) cannot be implemented because of code, provide documentation of these regulations		
	2				IEQc1	Enhanced Air Quality Strategies	1-2	Mechanical Engineer / Architect	OPTION 1. ENHANCED IAQ STRATEGIES: Comply with the following requirements, as applicable. Mechanically ventilated spaces: A. entryway systems; B. interior cross-contamination prevention; and C. filtration. Naturally ventilated spaces: A. entryway systems; and D. natural ventilation design calculations.	**ARCH 12/9/2021:** primary entrance with roll away mat can be provided for one of the new entrances. **MECH 12/9/2021-** Special exhaust, and MERV 13 filtration CO2 sensors should be easy to provide. Project is using DVC and does not expect many additional spaces in need of the CO2 monitors.	AME to identify densely occupied spaces ARCH to confirm primary entrances and entryway systems existing + new building
						Enhanced IAQ Strategies	1				
						Additional Enhanced IAQ Strategies	1				
	3				IEQc2	Low-Emitting Materials	1-3	Architect / Interior Designer / Contractor	This credit includes requirements for product manufacturing as well as project teams. It covers volatile organic compound (VOC) emissions in the indoor air and the VOC content of materials, as well as the testing methods by which indoor VOC emissions are determined. Different materials must meet different requirements to be considered compliant for this credit. The building interior and exterior are organized in seven categories, each with different thresholds of compliance. The building interior is defined as everything within the waterproofing membrane. The building exterior is defined as everything outside and inclusive of the primary and secondary weatherproofing system, such as waterproofing membranes and air- and water-resistive barrier materials.	**LEED PM 11/19/2021**: 3 pts noted as required by UBC LEED Implementation Guide	
						Paints, Coatings, Adhesives + Sealants	1				
						ADD Composite Wood + Flooring	2				
						ADD Ceiling, walls, thermal + acoustic Insulation (or Furniture)	3				
	1				IEQc3	Construction IAQ Management Plan	1	Contractor	Develop and implement an indoor air quality (IAQ) management plan for the construction and preoccupancy phases of the building. The plan must address all of the following.	**LEED PM 11/19/2021:** Item noted as required by UBC LEED Implementation Guide. Is standard practice. No issue anticipated	
	2				IEQc4	Indoor Air Quality Assessment	1-2	Owner / Mechanical Engineer / Contractor	Select one of the following two options, to be implemented after construction ends and the building has been completely cleaned. All interior finishes, such as millwork, doors, paint, carpet, acoustic tiles, and movable furnishings (e.g., workstations, partitions), must be installed, and major VOC punch list items must be finished. The options cannot be combined. OPTION 1. FLUSH-OUT (1 POINT) PATH 1. BEFORE OCCUPANCY Install new filtration media and perform a building flush-out by supplying a total air volume of 14,000 cubic feet of outdoor air per square foot (4 267 140 liters of outdoor air per square	**UBCPT12/9/2021:** Testing likely to be pursued. **LEED PM 11/19/2021**: 1 pt noted as required by UBC LEED Implementation Guide	
						Flush-Out	1				
						Air Testing	2				
	1				IEQc5	Thermal Comfort	1	Mechanical Engineer	Meet the requirements for both thermal comfort design and thermal comfort control. THERMAL COMFORT DESIGN OPTION 1. ASHRAE STANDARD 55-2010	**MECH 12/9/2021:** ASHRAE 55.1 is achievable, No open office space. Building is either private office or shared lab spaces. Meeting controllability should not be an issue **LEED PM 11/19/2021**: Item noted as required by UBC LEED Implementation Guide. Aligns with Project's lab use as well.	AME to confirm if credit is achievable when appropriate
	1		1		IEQc6	Interior Lighting	1-2	Lighting Designer	Select one or both of the following two options. OPTION 1. LIGHTING CONTROL (1 POINT) **For at least 90% of individual occupant spaces, provide individual lighting controls that enable occupants to adjust the lighting to suit their individual tasks and**	**ELEC 12/9/2021:** Lighting will be zoned similar to mechanical. Lights will be continually dimmable provided required level of control. **LEED PM 11/19/2021:** Credit achievable, aligns with project's lab use as well.	
						Lighting Control	1				
						Lighting Quality	2				
			3		IEQc7	Daylight	1-3	Daylighting Consultant	Provide manual or automatic (with manual override) glare-control devices for all regularly occupied spaces. Select one of the following three options. OPTION 1. SIMULATION: SPATIAL DAYLIGHT AUTONOMY (2–3 POINTS, 1-2 POINTS HEALTHCARE) Demonstrate through annual computer simulations that spatial daylight autonomy300/50% (sDA300/50%) of at least 55%, 75%, or 90% is achieved. Use regularly occupied floor area. Healthcare projects should use the perimeter area determined under EQ Credit Quality Views. Points are awarded according to Table 1. AND	**LEED PM 11/19/2021:** Credit historically difficult to achieve and would require add fee.	
						Simulation: Spatial Daylight Autonomy (55%	2-3				
						Simulation: Illuminance Calculations (75%,	1-2				
						Measurement (75%, 90%)	2-3				
	1				IEQc8	Quality Views	1	Architecture	Achieve a direct line of sight to the outdoors via vision glazing for 75% of all regularly occupied floor area. View glazing in the contributing area must provide a clear image of the exterior, not obstructed by frits, fibers, patterned glazing, or added tints that distort color balance. Additionally, 75% of all regularly occupied floor area must have at least two of the following four kinds of views: multiple lines of sight to vision glazing in different directions at least 90 degrees apart;	**ARCH 12/9/2021:** Credit should achievable. There are some below-grade spaces which are not permitted to have windows but otherwise should be achievable. Arch will take reasonability for documentation of the credit. **LEED PM 11/19/2021**: Credit historically achievable, ARCH to comment on feasibility and WWR	Intg Sust to provide example of the diagram / views exercise
			1		IEQc9	Acoustic Performance	1	Acoustic Consultant	For all occupied spaces, meet the following requirements, as applicable, for HVAC background noise, sound isolation, reverberation time, and sound reinforcement and masking.	**LEED PM 11/19/2021:** Credit historically difficult to achieve and would require add fee.	

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Innovation + Design Process		Possible Points:	6	RESPONSIBILITY	LEED Requirement	Notes	Actions
IDc1.1	Innovation: Occupant Comfort Survey	1		TBD	Administer one occupant comfort survey to collect anonymous responses regarding at least the following: acoustics; building cleanliness; indoor air quality; lighting; thermal comfort. The responses must be collected from a representative sample of building occupants making up at least 30% of the total occupants. Document survey results. Develop and	**2020-10-15 UBCPT:** Operations-based items are acceptable	
IDc1.2	Innovation Pilot: Bird Collision Deterrence	1		TBD	Implement a lighting purchasing plan that specifies an overall building average of 70 picograms of mercury per lumen-hour or less for all mercury-containing lamps purchased for the building and associated grounds within the project boundary. Include lamps for both indoor and outdoor fixtures, as well as both hard-wired and portable fixtures. Lamps containing no	UBCPT 12/9/2021: Do not use Fritted Glass for Bird Collision Deterrence, use some narrative around window orientation and	
IDc1.3	Innovation Pilot: All Gender Washrooms	1		TBD	To Be Revised based off selected Pilot credit.	**ARCH 12/9/2021:** Project will provide gender neutral washrooms	
IDc1.4	Exemplary Performance: Access to Quality Transit	1		TBD	Double Base Requirement	2020-10-15 IG: Item noted as required by UBC LEED Implementation Guide	
IDc1.5	Exemplary Performance: Construction Waste Management	1		TBD	Meet highest Diversion and Reduction targets	2020-10-15 IG: Item noted as required by UBC LEED Implementation Guide	
IDc2	LEED™ Accredited Professional	1		Sustainability Consultant	At least one principal participant of the project team must be a LEED Accredited Professional (AP) with a specialty appropriate for the project.	2020-10-15 IG: Item noted as required by UBC LEED Implementation Guide	

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Regional Priority Credits		Possible Points:	4	RESPONSIBILITY	LEED Requirement	Notes	Actions
RPc1.1	Regional Priority: Optimize Energy (10 pts)	1		Sustainability Consultant	**Enhanced Commissioning (5 pts)** **Optimize Energy Performance (10 pt)** **Building Life-Cycle Impact Reduction (3 pt)** Rainwater Management (2 pt) Outdoor Water Use Reduction (2 pt) Indoor Water Use Reduction (4 pt)	2020-10-15 IG: 4 pts noted as required by UBC LEED Implementation Guide	
RPc1.2	Regional Priority: Enhanced Commissioning (5 pts)	1		Sustainability Consultant			
RPc1.3	Regional Priority: Building Life-Cycle Impact Reduction (3 pts	1		Sustainability Consultant			
RPc1.4	Regional Priority: Rainwater Management - 2 Pts	1		Sustainability Consultant			

	63	19	14	14

Total		Possible Points:	110	Certified: 40 to 49 points	Silver: 50 to 59 points	Gold: 60 to 79 points	Platinum: 80 to 110