

Site D - REAP 3.0 Checklist

PART TWO: REAP 3.0 PERFORMANCE LEVELS + CHECKLIST					Date	24-Mar-16			
Performance Category: Sustainable Sites (SS) The intent of the Sustainable Sites category is to reduce the negative impacts of development, maintain the natural landscape, vegetation and environmental attributes of the site and provide new landscaping that enhances the microclimate.									
					P	Cur	Y	Mb	N
					Score: 10	0	2	8	0
SS MANDATORY									
SS	M1	Storm Water Management Plan Develop a plan that integrates the on-site stormwater management system with the neighbourhood-wide stormwater management principles and strategies, including controlling of rate and/or quantity of run-off as required.			M		M		
SS	M2	Adapted and Ecologically Sound Planting Demonstrate that landscape design has minimized the need for pesticides and irrigation through the selection of adaptive and drought-tolerant plants and consideration of the principles of Integrated Pest Management and xeriscaping.			M		M		
SS	M3	Bicycle Parking Provide short term and long term covered storage facilities for securing bicycles in accordance with the <i>UBC Development Handbook</i> .			M		M		
SS	M4	Contribution to Community Car Sharing Contribute to the development of a community car-sharing network by funding the equivalent of one community vehicle per 100 residential units.			M		M		
SS	M5	Light Pollution Reduction Do not exceed Illuminating Engineering Society of North America (IESNA) illuminance requirements as stated in the <i>Recommended Practice Manual: Lighting for Exterior Environments</i> .			M		M		
SS	M6	Recycling Collection Provide for collection of domestic paper, plastic, glass and metal recyclables by contracting with a waste management company for the service. Recycling storage space shall be designed in accordance with <i>Metro Vancouver's Technical Specifications for Recycling Amenities</i> .			M		M		
SS	M7	Compost Collection Provide a space in the building for the collection compost and provide for the compost collection through a contract with UBC Waste Management or another waste management service provider. Design the space in the building in accordance with <i>Metro Vancouver's Technical Specifications for Recycling Amenities</i> .			M		M		
SS 1 RECYCLING + COMPOSTING					2	0	2	0	0
SS	1.1	In-Suite Recycling + Composting Station Provide a space and system for simplified separation and collection of recycling and compostables in each suite or unit.	2				2		
SS 2 ALTERNATIVE TRANSPORTATION					8	0	0	8	0
SS	2.1	Additional Bicycle Facilities In addition to the requirements for bicycle parking in the <i>uac Development Handbook</i> , provide an additional 0.25 Class I bicycle storage/bedroom and a bicycle repair station within the building.	2					2	
SS	2.2	Electric Vehicle Charging - Visitor Provide one dedicated parking spot per 100 residential units for visitors of residents/owners, fully equipped with Level 2 charging station.	2					2	
SS	2.3	Electric Vehicle Charging - Resident Install necessary conduit and transformer capacity to accommodate Level 2 Charging Stations for the following percentage of owners'/residents' parking (Max = 4 Points): <ul style="list-style-type: none"> o 10% of owners'/residents' parking - 2 Points o 20% of owners'/residents' parking - 2 Points 	4					4	

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Performance Category: Water Efficiency (WE)							
The intent of the Water Efficiency category is to encourage strategies that reduce the amount of potable water used for landscape irrigation and building operations.							
			P	Cur	Y	Mb	N
			Score: 18	0	10	0	8
WE MANDATORY							
WE	M1	Efficient Irrigation Technology Design and install a water-efficient irrigation system that includes an automated controller, rain or soil sensors and pressure regulator and for non-grass areas use a micro- or drip-feed irrigation system or install a temporary irrigation system.		M	M		
WE	M2	Low-Flush Toilets Specify and install high efficiency 4.8 L per flush (1.28 gal) single flush toilets or 3.4/6 L per flush (0.9gal/1.6gal) dual flush toilets for all water closets.		M	M		
WE	M3	Low-Flow Faucet Aerators Specify and install low-flow faucets with aerators in all bathroom sinks (max. 3.8 L per minute) and in all kitchen sinks (max. 6.8 L per minute).		M	M		
WE	M4	Low-Flow Shower Heads Specify and install water-saving showerheads with a maximum flow rate of 8.5 L per minute in each shower.		M	M		
WE	M5	Energy Star Clothes Washers and Dishwashers Specify and install Energy Star-labelled clothes washers and dishwashers in each unit, or specify and offer only Energy Star models if these appliances are optional.		M	M		
WE 1 WATER EFFICIENT LANDSCAPING					6	0	
WE	1.1	Reduce Potable Water Use Reduce potable water use for site irrigation needs by 50% from the calculated midsummer baseline.	3		3		
WE	1.2	Eliminate Potable Water Use Eliminate potable water use for site irrigation needs.	3				3
WE 2 WATER USE REDUCTION					7	0	
WE	2.1	Low-Flow Showerheads Specify and install water-saving showerheads (maximum of 5.7 L per minute) in each shower.	2		2		
WE	2.2	Water Efficient Dishwashers Specify and install water-efficient dishwashers that use <= 11 L (2.91 gal) per normal wash cycle or if dishwashers are available only as an option, specify and offer only models complying with this credit.	1		1		
WE	2.3	Most Efficient Clothes Washers Specify and install Energy Star clothes washers listed as "Most Efficient" for current year, or if washers are available only as an option, specify and offer only models complying to this standard.	2		2		
WE	2.4	Water Use Reduction Package Additional credit for achieving credits: WE 1.1, WE 2.1, WE 2.2 and WE 2.3.	2		2		
WE 3 WATER METERING					5	0	
WE	3.1	Domestic Hot Water Metering In units with central hot water, provide individual domestic hot water metering.	3				3
WE	3.2	Domestic Cold Water Metering Provide individual cold water meters for all units.	2				2

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Performance Category: Energy & Atmosphere (EA)							
The intent of the Energy & Atmosphere category IS to reduce depletion of non-renewable energy resources and to reduce environmental impacts of their energy use, particularly emissions of local, regional and global air pollutants.							
			P	Cur	Y	Mb	N
			Score: 52	0	14	4	34
EA MANDATORY							
EA	M1	Minimum Roof Insulation Design the roof assembly with a minimum insulation value of R-40 h-ft2.oF/Btu (7.04°K-m2/W) for buildings with attic space and R-28 h-ft2.oF/Btu (4.93 °K-m2/W) for cathedral ceilings/flat roofs.		M	M		
EA	M2	Minimum Exterior Wall Insulation Design the exterior insulated wall area with a minimum thermal resistance of effective (overall) R-15.6 h-ft2.oF/Btu (2.75 °K-m2/W) for above grade non-glazed wall areas, and R-7.5 h-W.oF/Btu (1.32 °K-m2/W) "continuous insulation" for below grade walls.		M	M		
EA	M3	Minimum Floor Insulation Design floors above non-heated parkade areas with a minimum insulation value of R-30 h-ft2.oF/Btu (5.28 °K-m2/W) for framed floors and R-15.6 h-ft2.oF/Btu (2.75 °K-m2/W) for slab floors.		M	M		
EA	M4	Energy Efficient Windows Specify and install Energy Star-rated windows or windows with a maximum overall U-value of 0.35 Btu/hr-ft2.. OF (2.0 W/m2.. OK for non-metal framed windows or a maximum overall U-value of 0.45 Btu/hr-ft2.. OF (2.55 W/m2.. OK) for metal framed windows.		M	M		
EA	M5	Minimum Boiler Efficiency Specify and install boilers with a minimum thermal efficiency of 84% IAFUE of minimum 90% or heat using District Energy.		M	M		
EA	M6	Domestic Hot Water Specify and install gas DHW boilers with a minimum efficiency of 84% (mid-efficiency boiler) or heat domestic hot water using District Energy.		M	M		
EA	M7	Energy Star Dishwashers and Refrigerators Specify and install Energy Star-labelled dishwashers and refrigerators in each unit.		M	M		
EA	M8	Programmable Thermostats Specify and install programmable thermostats for at least the largest heating zone in each unit.		M	M		
EA	M9	Common Area Lighting Specify and install only non-incandescent lighting, such as fluorescent, compact fluorescent or LED, in common areas.		M	M		
EA	M10	Parkade and Corridor Lighting Controls Specify and install parkade and corridor lighting controls to automatically reduce the overall lighting level by at least 30% in a lighting zone when the zone is unoccupied.		M	M		
EA	M11	District Energy Design the building to be either connected to the District Energy System or District Energy compatible in accordance with "District Energy at UTown@USC Design Guide for Compatibility with District Energy, April 30, 2013".		M	M		
EA ENERGY EFFICIENT TARGETS			34	0	6	0	28
EA	Gold	Mandatory Design the building to meet a maximum EUI of 160 kwh/m2/yr, demonstrated using the USC Energy Modeling Guidelines. This credit is mandatory and required for achievement of REAP Gold.	6		6		
EA	Gold	Gold Plus Design the building to meet a maximum EUI of 140 kwh/m2/yr, demonstrated using the USC Energy Modeling Guidelines. This credit is mandatory and required for achievement of REAP Gold Plus.	8				8
EA	Plat	Platinum	10				10

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		Design the building to meet a maximum EUI of 120 kwh/m2/yr, demonstrated using the USC Energy Modeling Guidelines. This credit is mandatory and required for achievement of REAP Platinum.						
EA	Plat+	Platinum Plus Design the building to meet a maximum EUI of 105 kwh/m2/yr, demonstrated using the USC Energy Modeling Guidelines. This credit is mandatory and required for achievement of REAP Platinum Plus.	10					10

EA1	ENERGY METERING		1	0		0	0	1
EA	1.1	Thermal Energy Sub-Metering Provide separate metering in individual units for measuring thermal energy consumption used for space heating.	1					1

EA2	RENEWABLE ENERGY		9	0		6	0	3
EA	2.1	Future Renewable Electricity Pre-wire buildings and provide installation space for future use of photovoltaic technologies or other renewable electricity generation.	1			1		
EA	2.2	Renewable Electricity Utilization Utilize photovoltaic technologies or other renewable electricity generation for a portion of the building's electrical supply.	3					3
EA	2.3	Low-Carbon District Energy Utilization Utilize low carbon, renewable energy through connect to the District Energy System for the building's thermal energy supply (or be District Energy compatible).	5			5		

EA3	COMMISSIONING		4	0		0	4	0
EA	3.1	Commissioning Contract a third party Commissioning Authority to develop + implement a commissioning plan for all major building energy systems and verify they are installed, calibrated and perform according to design intent.	4				4	

EA4	AIR TIGHTNESS		2	0		0	0	2
EA	4.1	Building Envelope Airtightness The building envelope shall be constructed so that the air change rate is not greater than 3.5ACH50 when measured in accordance with CAN/CGSB-149.15-M86 (Determination of the airtightness of Building envelopes by the Fan Depressurization Method.)	2					2

EA5	ENERGY MODELLING		2	0		2	0	0
EA	5.1	Energy Modeling Workshop Model the energy performance of the building and hold a workshop with the design team, a representative from Campus sustainability and contractor to evaluate the results and optimize the design of the building.	2			2		

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Performance Category: Materials & Resources (MR)						
The intention of the Materials and Resources category is to encourage design strategies that reduce and reuse material resources, reduce construction waste, and to select building materials that are environmentally						
		P	Cur	Y	Mb	N
Score:		18	0	2	6	10

MR1 RECYCLED CONTENT AND REUSED MATERIALS					6	0	1	0	5
MR	1.1	Reused Building Materials Use salvaged, refurbished, or reused materials for at least 5% of the total cost of building materials.	2						2
MR	1.2	Reused Building Materials Use salvaged, refurbished, or reused materials for at least 10% of the total cost of building materials.	2						2
MR	1.3	Recycled Content Materials Specify and use building materials with the following recycled content levels: 1. Common area carpet with minimum 25% recycled content 2. Drywall with min. 15% recycled content 3. Batt insulation with min. 40% recycled content 4. Doors contain min. 15% recycled material 5. Concrete with min. 20% fly ash content, excluding suspended slabs 6. Concrete with min. 40% fly ash content, excluding suspended slabs 7. Cabinetry with min. 20% recycled content 8. MDF products with min. 50% recycled content o Minimum four recycled content items on list above - 1 point o All eight recycled content items on list above - 2 points	2				1		1

MR2 REGIONAL MATERIALS					2	0	1	0	1
MR	2.1	Regionally Manufactured Building Materials Use a min. of 20% (by value) of building materials and products that are assembled or manufactured within a radius of 800 km (500 miles).	1				1		
MR	2.2	Regionally Sourced Building Materials Of the materials from Credit MR 2.1, use a min. of 50% (by value) of building materials and products that are extracted, harvested or recovered (as well as assembled or manufactured) within a radius of 800 km (500 miles).	1						1

MR3 CERTIFIED AND NON-ENDANGERED FOREST PRODUCTS					6	0	0	2	4
MR	3.1	Dimensional Lumber and Plywood Demonstrate that a min. of 50% of the total value of dimensional lumber and plywood is certified in accordance with either: o CSA2809 - 2 Points o Or Forest Stewardship Council (FSC) - 3 Points	3					2	1
MR	3.2	Hardwood Floors Specify and install hardwood or bamboo flooring that is certified in accordance with the Forest Stewardship Council or CSA 2809. If floors are offered only as an option, specify and offer only bamboo or renewable products with third-party certification. o CSA2809 - 2 Points o Or Forest Stewardship Council (FSC) - 3 Points	3						3

MR4 BUILDING PRODUCT - INGREDIENTS					4	0	0	4	0
MR	4.1	Transparency of Ingredients Install ten different building products from three different manufacturers that demonstrate the chemical inventory of the product to and accuracy of 0.1 % for each product. For each product selected provide either: • Health Product Declaration (HPD) • Manufacturers Inventory of all ingredients by CAS number, or • Declare Label (Living Building Institute)	2					2	
MR	4.2	Optimization of Ingredients	2					2	

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		Demonstrate that a minimum of 10% (by value) of building materials are optimized for ingredient content by demonstrating optimization in one of the following ways: <ul style="list-style-type: none">• GreenScreen v1.2 benchmark 1 minimum• Red List free• Free of ingredients listed on REACH Authorization + Candidate List						
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Performance Category: Indoor Environmental Quality (IEQ)							
The intention of the Indoor Environmental Quality category is to achieve enhanced indoor environmental quality through the thoughtful selection and application of materials and effective ventilation strategies.							
			P	Cur	Y	Mb	N
Score:			8	0	8	0	0
IEQ MANDATORY							
IEQ	M1	Adhesives and Sealants Specify and use adhesives, sealants and sealant primers that do not exceed the VOC limits of the Canadian Environmental Choice/EcoLogo program or do not exceed the VOC limits specified in the State of California's South Coast Air Management District Rule #1168.		M	M		
IEQ	M2	Paints and Coatings Specify and use paints and coatings that carry an EcoLogo label or those rated at a minimum GPI-1 by the Master Painter's Institute on the interior of the building.		M	M		
IEQ	M3	Carpet Specify and install carpet and carpet cushion that carry the following certifications: Carpet and Rug Institute Green Label Plus or the EcoLogo.		M	M		
IEQ	M4	Ventilation Effectiveness Prepare and implement an effective air management strategy that meets the requirements of the current versions of CAN/CSA F326 or ASHRAE-62.1 or 62.2 as applicable to the building configuration.		M	M		
IEQ1 LOW-EMITTING MATERIALS					8	0	0
IEQ	1.1	Low VOC Paints and Coatings Specify and use paints and coatings rated at a minimum GPS-2 by the Master Painter's Institute on the interior of the building.	2		2		
IEQ	1.2	Low-Emitting Composite Wood Products Specify and install interior composite wood products, such as flooring, doors, trim, etc., that have no added urea formaldehyde. Cabinetry is excluded from this credit.	2		2		
IEQ	1.3	Low-Emitting Insulation Specify and install formaldehyde-free insulation on the interior of the building.	2		2		
IEQ	1.4	Low-Emitting Cabinetry Specify and install interior cabinetry (doors, boxes, counters and laminating adhesives) that contain no added urea formaldehyde.	2		2		

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Performance Category: Construction (CON) The construction process can impose significant and lasting impact on the ecology of both the site and beyond. The construction credits acknowledge and reward contractors who have followed best practice.						
				P	Cur	Y Mb N
				Score: 4	0	0 0 4

CON MANDATORY						
CON	M1	Staging and Construction Prepare and implement a Staging and Construction Plan, including alternate detour information and signage for pedestrians and cyclists.		M	M	
CON	M2	Vegetation Safeguards and Land-Clearing Debris Prepare a site plan showing the sizes and locations of vegetation to be removed, retained and salvaged, including plants located on adjacent public rights-of-way (see reference guide) AND develop a plan to effectively handle debris from land clearing and divert it from landfill disposal.		M	M	
CON	M3	Truck Management Plan Prepare and implement a comprehensive truck management plan for the project that conforms to the <i>UBC Strategic Transportation Plan</i> and the <i>Neighbourhood Plan Development Guidelines</i> .		M	M	
CON	M4	Wheel Wash Provide a wheel wash for vehicles leaving the site OR a street cleaning program and catch basin protection.		M	M	
CON	M5	Erosion and Sedimentation Control Prepare and implement a Site Sediment and Erosion Control Plan that conforms to <i>Best Management Practices Guide for Stormwater: Appendix H – Construction Site Erosion and Sediment Control Guide</i> (GVS&DD, October 1999).		M	M	
CON	M6	Waste Management Plan Prepare and implement a waste management plan that diverts 75% (by weight) of construction and demolition waste from landfill.		M	M	

CON1 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT PLAN				4	0	0 0 4
CON	1.1	Indoor Air Quality Management Plan Prepare and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building.	2			2
CON	1.2	Flushout / IAQ Test After construction ends and prior to occupancy conduct a minimum two-week continuous building flushout with new filtration media at 100% outside air or conduct a Baseline Indoor Air Quality Test.	2			2

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Performance Category: Innovation & Design Process (ID)							
The intent of the Innovation and Design Process category is to provide incentive and credit for general design and other innovative practices that improve the overall sustainability and environmental performance of the project.							
		P	Cur		Y	Mb	N
		Score: 24	0		9	10	5

ID MANDATORY							
ID	M1	Goal-Setting Workshop Hold a green building workshop or Design Charrette including the developer, design consultants and contractor to review and develop the strategies for achieving the development's goals and priorities relevant to the Residential Environmental Assessment Program.		M	M		
ID	M2	Educate the Homeowner Develop a homeowner's manual that promotes sustainable behavior and describes all of the sustainable features of the project instructing the homeowner on their proper use. This manual should be included in record drawings or some form that will be accessible beyond the first generation of owner/resident.		M	M		

ID1 INNOVATION IN MATERIALS					4	0	
ID	1.1	Life-Cycle Assessment Perform a Life-Cycle Assessment of the project's structure and enclosure and demonstrate a minimum of 5% improvement from a reasonable baseline building for three environmental categories.	4				4

ID2 INTEGRATIVE AND UNIVERSAL DESIGN					4	0	
ID	2.1	Green Building Specialist Engage an expert in green buildings and sustainable construction practices to provide advice on effective green building strategies to the design team.	1		1		
ID	2.2	Design for Safety and Accessibility Demonstrate that at least 25% of the units in the building have been designed to meet the intent of SAFERhome standards which address issues of accessibility, children's safety, seniors and aging in place.	1				1
ID	2.3	Design for Security and Crime Prevention Demonstrate that the design has been reviewed by an accredited Crime Prevention Through Environmental Design (CPTED) practitioner	2			2	

ID3 MARKET TRANSFORMATION					1	0	
ID	3.1	Educate the Sales Staff Develop marketing materials based on the environmental performance of the project and ensure that the sales staff is knowledgeable about the green building features.	1		1		

ID4 ACADEMIC LINKS					9	0	
ID	4.1	Enhance Research or Further Student Development Collaborate with UBC students and/or faculty on a research project or other opportunities to enhance the academic mission of the University and integrate it with the community. The research project should be concurrent with, and applicable to, the current project.	5		5		
ID	4.2	Energy Data Sharing Incorporate a data sharing agreement into the sales contracts or strata constitution that allows building aggregate energy data to be collected for use by the UBC Campus Sustainability.	4			4	

ID5 INNOVATIVE DESIGN					6	0	
ID	5.1	Innovative Design Strategy or Exemplary Achievement Demonstrate exceptional performance above the requirements set by one of the existing credits or the implementation of an innovative design strategy not specifically addressed by any of the existing credits.	2		2		
ID	5.2	Innovative Design Strategy or Exemplary Achievement	2			2	

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		Demonstrate exceptional performance above the requirements set by one of the existing credits or the implementation of an innovative design strategy not specifically addressed by any of the existing credits.						
ID	5.3	Innovative Design Strategy or Exemplary Achievement Demonstrate exceptional performance above the requirements set by one of the existing credits or the implementation of an innovative design strategy not specifically addressed by any of the existing credits.	2				2	

	P	Cur	Y	Mb	N
TOTAL	134	0	45	28	61

Gold	45
Gold Plus	61
Platinum	76
Platinum Plus	101