The Residential Environmental Assessment Program (REAP) is a holistic green building rating system uniquely designed to guide UBC neighbourhood land development. The proposed updates to REAP (Version 3.2) will be realigned and restructured in order to achieve Green Building Action Plan goals and targets and UBC climate emergency and sustainability priorities, and will align with Province of BC’s goal that all new buildings be net-zero energy ready by 2032.

A review of REAP and proposed changes are detailed in Appendix 1.

APPENDICES

1. Proposed update: REAP 3.2
Proposed update: REAP 3.2
Presentation to Land Use and Sustainability Committee
UBC Green Building Action Plan
Pathway to a Net Positive Campus

Date: May 28th 2020
AGENDA

INTRODUCTION
TIMELINE
RESTRUCTURING
PROCESS FOR UPDATE
PROPOSED CREDITS
IMPROVING COMPLIANCE
NEXT STEPS
REAP is:

- A holistic green building rating system uniquely designed to guide UBC neighbourhood land development
- UBC’s policy lever for green buildings in neighbourhoods
- Mandatory compliance (gold certification) through land use policy and land lease
- REAP is integrated into the community planning and development approval process
- Developed and administered by UBC
REASONS FOR UPDATE

- Realign and restructure REAP in order to achieve Green Building Action Plan* goals & targets towards the vision of a net positive campus

- Align REAP with emerging UBC climate emergency and sustainability priorities: climate action, sustainable communities, good health & well-being and responsible consumption & production

- Paving the way for future alignment with CleanBC

*The Green Building Action Plan was Endorsed by Board in September 2018
TIMELINE FOR REAP 3.2 PROCESS

2020

Jan  Feb  Mar  April  May  June  July  Aug  Sep  Oct  Nov  Dec

REAP 3.2 process

Draft 1 intent
Draft 2 Requirements & Intent
Draft 3 working copy
Draft 4 Reference Guide
AVP/VP review
Board report
BOG Dec 3

Steering committees

Key linked processes

Stadium Neighbourhood Design Guidelines complete
Operational Sustainability SC
Climate Emergency
Development Handbook

Stakeholder Engagement

C&CP review
PT review
PT cost review
Developer review
Public review

Consultants

Regional energy study complete
UBC low carbon energy study start?
Climate Resilient MURB Study complete
Cost/technical consultants
REAP 3.2
MAJOR RESTRUCTURING

Impact Categories | %
--- | ---
Sustainable Sites | 8.8%
Water Efficiency | 13%
Energy & Atmosphere | 39%
Materials & Resources | 13%
Indoor Environmental Quality | 6%
Construction | 3%
Innovation & Design | 18%

Component Areas | %
--- | ---
Energy | 35%
Biodiversity | 8%
Water | 15%
Place and Experience | 5%
Materials and Resources | 8%
Climate Adaptation | 13%
Quality | 8%
Health and Wellbeing | 8%

PROPOSED REAP 3.2
*Innovation & Research earns bonus points
**REAP 3.2**

**PROCESS FOR UPDATE**

- Analysis of current credit achievements
- Transfer credits to new component areas
- Credit alignment with Board priorities and GBAP goals, targets and actions
- New credits developed using appropriate appropriate best practices*
- Obsolete credits deleted
- Preconditions and optimizations established with points assigned according to component area weightings
- Testing and calibration

<table>
<thead>
<tr>
<th>REAP 3.2</th>
<th>Total</th>
<th>Breakdown of preconditions and optimization credits</th>
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<tbody>
<tr>
<td></td>
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<td>New</td>
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<td>8</td>
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<tr>
<td>No. optimization credits</td>
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*Best practice sources used to develop credits: City of Vancouver green building requirements, BC Energy Step Code, LEED BD&C New Construction & multifamily Midrise, WELL Multi Family Residential Building Standard, Faculty & Staff Amenity Study, ReLi Standard 2.0, MBAR discussion papers, Designing Climate Resilient MURBs RDH Building Science, CSA Bird Friendly Design, Sustainable Sites Initiative, SEED’s studies **
Climate mitigation highlights in REAP 3.2:

- Greenhouse gas intensity reporting required (GHG target envisioned for REAP 4.0)
- Renewable energy credit updated to be related to project electricity production
- Metering and reporting of energy use required
- Refrigerant management reporting required

• **BC Energy Step Code Step 2- unchanged**
  (results of Low Caron Energy Study to inform updates in REAP 4.0)

Note that REAP already has requirements for: Energy Star appliances, building commissioning & electric car charging infrastructure
Climate adaptation highlights in REAP 3.2:
- Buildings to be 2050 climate ready for increased temperatures
- Credits for enhanced resiliency
- Credit for total water use reduction
- Credit for on site rainwater management

Note that REAP already has requirements for: low flow plumbing fixtures
Health and wellbeing highlights in REAP 3.2:

- New biodiversity credits promote building landscapes that enhance overall mental and physical well-being by relieving stress and mental fatigue through nature
- Increased bicycle storage for larger units and improved bicycle storage requirements
- Credits for designs that provide connections to nature and ample daylight for occupants
- Food growing opportunity credit

Note that REAP already has requirements for: interior air quality
Sustainable community highlights in REAP 3.2:

- REAP 3.2 in general supports increased sustainability in buildings which house UBC's community
- Credits for providing project community amenity spaces
- Improved credits for innovation and research which tie UBC community with research community
- Credits for providing site green space and planting which encourages sustainable landscapes
- Credit for bird friendly design to reduce bird collisions with buildings
- Credit for education and awareness to encourage increased knowledge of green buildings in the community

Note that REAP already has requirements for: security and crime prevention, education of homeowner and education of rental & sales staff
Responsible consumption and production highlights in REAP 3.2:

- Embodied carbon reporting required
- Improved credit for using environmentally responsible building materials
- Improved credit for using local building materials
- New credit for durable building, encouraging strategies which will reduce reliance on virgin materials

Note that REAP already has requirements for: zero waste ready requirements, healthy building materials, construction & demolition waste and building life cycle assessment
### REAP 3.2

#### PROPOSEDSCORESHEET

**Y** | **N** | **Energy & Emissions (E)** | **Points**
-----|------|---------------------------|--------
required | P1 | Energy Step Code Compliance (Step 2) | 35
required | P2 | Greenhouse Gas Intensity reporting | -
required | P3 | Building level energy monitoring and reporting | -
required | P4 | Domestic hot water sub-metering and reporting | -
required | P5 | Overall Value | -
required | P6 | Energy Star appliances | -
required | P7 | Electric vehicle charging infrastructure | -
required | P8 | Commissioning | -
required | P9 | Energy Modeling Workshop | -
required | P10 | Contribution to Low Carbon Transportation | -
required | P11 | Refrigerant Management reporting | -
required | P12 | Programmable thermostats | -
  | 1.1 | Optimized energy performance (Step Code 3MPH) | 20
2.1 | Renewable Energy | 8
3.1 | Enhanced submetering and reporting | 3
4.1 | Electric vehicle charging stations | 4

**Y** | **N** | **Water (W)** | **Points**
-----|------|----------------|--------
required | P1 | Low flow plumbing fixtures | -
required | P2 | Outdoor water use reduction | -
required | P3 | Water efficient appliances | -
required | P4 | Rainwater Management | -
  | 1.1 | Total water use reduction | 9
2.1 | On-Site Rainwater Management | 6

**Y** | **N** | **Biodiversity (B)** | **Points**
-----|------|-------------------|--------
required | P1 | Ecological Planning | -
required | P2 | Light pollution reduction | -
required | P3 | Bird friendly design - Basic | -
  | 1.1 | Planting for Biodiversity and ecosystem health | 3
2.1 | Site green space | 2
3.1 | Bird friendly design - Enhanced | 2
4.1 | Food growing opportunity | 1

**Y** | **N** | **Materials and Resources (M&R)** | **Points**
-----|------|-------------------------------|--------
required | P1 | Zero waste ready | -
required | P2 | Embedded carbon reporting | -
required | P3 | Construction and demolition waste | -
  | 1.1 | Environmentally responsible materials | 4
1.2 | Local materials | 3
1.3 | Healthy Building Materials | 1

**Y** | **N** | **Climate Adaptation (CA)** | **Points**
-----|------|-------------------------|--------
required | P1 | 2030 climate ready modelling requirements | -
  | 1.1 | 2030 climate ready, design (thermal) | 7
1.2 | Enhanced resiliency | 3
1.3 | On-site backup power | 3

**Y** | **N** | **Place & Experience (PE)** | **Points**
-----|------|------------------|--------
required | P1 | Project community amenity spaces | 5
  | 1.1 | Project exemplary community amenity spaces | 5

**Y** | **N** | **Health & Wellbeing (HW)** | **Points**
-----|------|-----------------|--------
required | P1 | Bicycle Parking & Storage Room(s) | -
required | P2 | Low emitting products | -
required | P3 | Indoor air quality management | -
  | 1.1 | IAQ assessment | 1
2.1 | Additional bicycle facilities | 2
3.1 | Low emitting products | 2
4.1 | Connection to nature | 1
5.1 | Daylight access | 2

**Y** | **N** | **Quality (Q)** | **Points**
-----|------|-----------------|--------
required | P1 | Educate the Homeowner | -
required | P2 | Educate the Sales Staff | -
required | P3 | Green Building specialist | -
required | P4 | Design for Security and Crime Prevention | -
  | 1.1 | Integrated design | 4
2.1 | Durable building | 2
3.1 | Education and Awareness | 2

**Y** | **N** | **Innovation & Research (I&R)** | **Points**
-----|------|-----------------|--------
required | P1 | Exemplary achievement | -
1.2 | Innovation or pilot | 3
2.1 | Research | 5

### Totals

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<th><strong>Y</strong></th>
<th><strong>N</strong></th>
<th><strong>Total Points</strong></th>
<th><strong>Additional Points</strong></th>
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required | | 100 | 10 |
10 | | 110 | 11 |

Gold | 50
Gold Plus | 50
Platinum | 20
Platinum Plus | 80
## REAP 3.2
### IMPROVING COMPLIANCE

<table>
<thead>
<tr>
<th>Improvements</th>
<th>benefits</th>
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</table>
| On line REAP submissions (using building permit portal) | • Reduced reliance on dropbox  
• More redundancy  
• More professional approach |
| Audits- site visits                                    | • Increased awareness during construction  
• More rigorous evaluation |
<p>| Fee for non-compliance                                 | • Provides incentives for compliance                             |
| Toolkits (e.g. templates for submission, improved website) | • Increased understanding &amp; compliance                           |</p>
<table>
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<th>NEXT STEPS</th>
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<tr>
<td>Land Use and Sustainability Committee review</td>
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<td>Low carbon energy supply project results</td>
<td>2021</td>
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<td>REAP 4.0</td>
<td>2021-22</td>
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</table>
SEED’s studies

- Zero Waste Design Strategies in Multi-Unit Residential Buildings Capstone Professional Report Sarah Labahn | MCRP August 2018
- Making Spaces: Bicycle Storage in Multi-Unit Residential Buildings on the University of British Columbia Campus PLAN 528A/550 August 10, 2017
- Making Space for Urban Agriculture in Multi-unit Residential Buildings: Guidelines for Developers and Recommendations for Policy Kristy McConnel University of British Columbia PLAN 528A April, 2017
- Research Paper
  Year-round monitoring reveals a unique seasonal pattern of bird-window collisions along the Pacific coast of North America, Krista L. De Groot¹, Alison N. Porter¹, Andrea R. Norris¹ and Andrew C. Huang¹Canadian Wildlife Service, Environment and Climate Change Canada, Delta, British Columbia, Canada