



Circular Letter No.: 2021.171

Issue Date: 1 September 2021

Application: BEAM Plus EB Version 2.0 Selective Scheme

Effective Date: 1 December 2021

Major Amendments and Enhancement of Submission Template for EU 1 to EU 7 under BEAM Plus EB Version 2.0 Selective Scheme

1. The Technical Circular hereby announces the major amendment to the existing standards and the roll out of [excel submission templates](#) and [e-Forms on iBEAM](#) for credits EU 1 to EU 7 under BEAM Plus Existing Buildings Version 2.0 Selective Scheme.
2. The requirements given in the BEAM Plus EB Version 2.0 Selective Scheme Manual are hereby updated with the enclosures in [Annex A](#) of this Technical Circular.
 - a. Pages A-1 to A-4 provide a summary of major amendments made to the existing standards;
 - b. Pages A-5 to A-9 shall replace all content on EU Aspect in Section 1.7 Summary of Credits specified in Pages 27 to 30 of the Manual;
 - c. Pages A-10 to A-33 shall replace all content in Section 5 on Energy Use specified in Pages 117 to 135 of the Manual; and
 - d. Pages A-34 to A-37 shall replace Appendix 8.1 specified in Pages 197 to 200 of the Manual.
3. The submission using the updated assessment criteria enclosed in this Technical Circular Letter shall be made either by **excel format of submission templates** or by means of **e-Forms through iBEAM**.
4. To facilitate a smooth migration, a grace period from 1 **September 2021 to 30 November 2021** (the “Grace Period”) with the following arrangements will be implemented:
 - a. Projects that commence the FA submission during the Grace Period will be allowed to opt for assessment using previous assessment criteria or voluntarily comply with this Technical Circular Letter.
 - b. Projects that commence the FA submission on or after the Grace Period (i.e. on or after 1 December 2021) shall adopt the updated assessment criteria and use the excel format of submission template or e-Forms on iBEAM for assessment submission.

A handwritten signature in black ink, appearing to be 'Ir SK Ho', is written over a horizontal line.

Ir SK Ho
Chairperson of Standards Sub-committee

Summary of Major Amendment

Major Amendment Number : 1
Date of Issue : 1 September 2021

Below is the list of amendments made to the manual:

Credit	Section	Amendments
General	-	1. Definition of “Building Manager”, “building portfolio”, “building project”, “first assessment submission”, “individual building assessment” and “Management, Operation & Maintenance (MO&M)” have been added in Appendix 8.1 Glossary.
EU 1	Credit Requirement	1. Credit subheads have been added. 2. Credit requirement of EU 1b revised to “2 credits for providing energy management plan with (i) objective, targets and reporting on progress (if applicable) and (ii) endorsed by Building Manager or top management of Building Owner/ Building Management Company.”
	Criteria	3. Description revised to clarify the energy management policy and plan under EU 1a & 1b shall be endorsed by the Building Manager or top management of Building Owner/ Building Management Company, in accordance with the FAQ released on 1 September 2021. 4. The responsibility and qualification of Energy Warden has been clarified for EU 1c. 5. Requirement of Energy Warden under EU 1c revised to clarify the property management meetings should be related to energy management. 6. Narrative has been included for EU 1c to clarify the Building Manager or top management of Building Owner/ Building Management Company, who approves the energy management plan, cannot act in a dual role as Energy Warden to execute the energy management plan.
	Documentation	7. Organisation chart has been added for EU 1a & 1b for demonstrating the line of authority of the Building Manager or top management of Building Owner/ Building Management Company. 8. The requirement on energy management records has been removed for EU 1b. 9. Professional certificate of the Energy Warden has been added for EU 1c to substantiate the professional qualification. 10. Meeting schedule or similar substantiation within the past 12 months has been added for EU 1c to justify the Energy Warden participates at least 80% of property management meetings that are related to energy management.

Credit	Section	Amendments
EU 2	Credit Attainable	1. Revised to 7 + 9 Bonus.
	Credit Requirement	2. The listed sub-metering systems under EU 2a revised to (i) Air-conditioning system (chiller plant/ air-conditioner), (ii) Lighting and small power, (iii) Lift and escalator (if any), and (iv) Plumbing and drainage. 3. Remark has been included under EU 2a to clarify the sub-metering provision for air-conditioning system and meaning of “chiller plant”. 4. Bonus credits EU 2e on retro-commissioning (RCx) has been added.
	Criteria	5. Clarification on the energy audit requirement has been included in accordance with Technical Circular Letter 2018.147. 6. The credible greenhouse gas (GHG) accounting standard/ guideline listed in EU 2d has been updated to include GHG Protocol and ISO 14064-1. 7. Boundary of the GHG accounting and reporting process has been clarified in EU 2d. 8. In the case of portfolio assessment, the reporting period has been clarified in EU 2d. 9. Example of Qualified Service Provider (QSP) has been added in EU 2d. 10. Criteria have been added for EU 2e.
	Documentation	11. Documentation has been updated for EU 2d to clarify the supporting to demonstrate the qualification of QSP. 12. Documentation has been added for EU 2e.
	Background	13. Background information on retro-commissioning has been included.
EU 3	Credit Requirement	1. The requirement of “upgrades in the past 3 years” under EU 3b has been removed. 2. Numbering of sub-items has been updated for EU 3b. 3. Requirement of the following sub-items has been updated for EU 3b: <ul style="list-style-type: none"> a. Air-conditioning system: i, ii, iv, ix, x, xi, xiv b. Lighting system: ii, iii c. Lift and escalator system: iii, v d. Other system: i 4. Sub-items “4 credits for electronic ballasts for all fluorescent lamps” and “4 credits for replacing >80% of T8 to T5” have been removed for EU 3b. 5. Remark has been included under EU 3b to clarify the requirement for “free cooling system”. 6. Remark has been included to clarify the meaning of “all areas”, in accordance with the FAQ released on 26 September 2017.

Credit	Section	Amendments
	Criteria	7. Revise “top management of Building Owner/ Building Management” to “Building Manager”. 8. Submittals in relation to the date of installation have been removed for EU 3b. 9. Narrative has been added for EU 3b to clarify for building project recertifies for the EU aspect under Selective Scheme of EB v2.0, evidence shall be provided to demonstrate the energy efficient measure(s) submitted for assessment is different from those achieved in past certification.
	Documentation	10. Documentation has been updated for EU 3b to clarify the supporting for recertification project.
EU 4	Credit Attainable	1. Revised to 11 + 2 Bonus
	Credit Requirement	2. HKGBC Benchmarking and Energy Saving Tool updated from “HK BESTOF” to “HK BESTCOM” in accordance with Technical Circular Letter 2017.141. 3. Description in EU 4a has been updated to clarify the requirement for the two compliance paths: “Compliance Path 1: EMSD Online Benchmarking Tool” and “Compliance 2: Recognition Scheme for HK BESTCOM”. 4. The point scale of benchmarking results under EU 4a and annual energy use reduction under EU 4b have been updated. 5. The credit requirement for EU 4b has been revised to cater the building projects that are not covered by EMSD Online Benchmarking Tool and hence not applicable in EU 4a.
	Criteria	6. The data used for the EMSD online benchmarking under EU 4a has been revised from the “past 2 nd to 5 th year” to “past 12 months”. 7. Remark has been included to clarify that in the case of portfolio assessment, the number of credit points awarded for the portfolio shall be based on the individual building project that achieves the least credit point(s) in the respective credit of EU 4a and EU 4b.
	Documentation	8. Description has been updated to clarify the required submittals for the two compliance paths under EU 4a.
EU 6	Documentation	1. Description has been revised to clarify the promotional material should have indication describing the name and date of the event. 2. Include other examples of documentation to show the promotion or participation of the programme by the building users.

Credit	Section	Amendments
EU 7	Criteria	1. Example of the innovation techniques has been included: (i) Conducting research and development or participating in competition with published paper related to energy aspects of the assessed building project/ building portfolio, (ii) Renewable energy system, (iii) Renewable Energy Certificate (REC), (iv) Separate energy charges, and (v) Digital platform for building users to understand the energy usage within their spaces.
	Documentation	2. Documentations have been updated based on the list of examples of innovation technique.

1.7 Summary of Credits

	Section	Credit Requirement	Credit
5	Energy Use (EU)		51 + 13B
EU 1	Energy Management	<p>a) Energy Management Policy 1 credit for providing an energy management policy endorsed by Building Manager or top management of Building Owner/ Building Management Company.</p> <p>b) Energy Management Plan 2 credits for providing energy management plan with (i) objective, targets and reporting on progress (if applicable) and (ii) endorsed by Building Manager or top management of Building Owner/ Building Management Company.</p> <p>c) Appointment of Energy Warden 1 credit for appointing an Energy Warden in the Building Management Company.</p>	<p>1</p> <p>2</p> <p>1</p>
EU 2	Energy Analysis	<p>a) Data Collection Facilities Maximum 3 credits for providing sub-metering systems for each of the following electrical loads: i. Air-conditioning system (chiller plant/ air-conditioner); ii. Lighting and small power; iii. Lift and escalator (if any); and iv. Plumbing and drainage</p> <hr/> <p>b) Data Collection Record 1 credit for providing total building energy consumption data record of at least 24 months for building services under the control of Building Owner/ Building Management Company.</p> <p>c) Energy Audit Report 1 credit for conducting energy audit in accordance with the Buildings Energy Efficiency Ordinance (Cap 610) requirement for existing buildings.</p> <p>1 credit for filling up Table (II) to Table (VIII) under the Template 1 on Additional Information to Executive Summary of Energy Audit Report.</p> <p>d) Carbon Audit Report 1 credit for conducting carbon audit in accordance with the requirements as stipulated in the credible greenhouse gas (GHG) accounting standard/ guideline.</p> <hr/> <p>e) Retro-Commissioning</p> <p>i. Planning and Investigation 1 Bonus credit for planning the retro-commissioning (RCx) process and identifying the potential energy saving opportunities (ESOs).</p> <p>ii. Implementation Maximum 3 Bonus credits for implementing the selected ESOs for each of the following systems: a. Air-conditioning system; b. Electrical system; c. Lift and escalator (if any) system; and d. Plumbing and drainage system.</p> <p>iii. On-going Commissioning Maximum 3 Bonus credits for executing on-going commissioning for each of the following systems:</p>	<p>3</p> <p>1</p> <p>1</p> <p>1</p> <p>1B</p> <p>3B</p> <p>3B</p>

Section	Credit Requirement	Credit
5	Energy Use (EU)	51 + 13B
	<ul style="list-style-type: none"> a. Air-conditioning system; b. Electrical system; c. Lift and escalator (if any) system; and d. Plumbing and drainage system. 	
	<ul style="list-style-type: none"> iv. RCx Professional/ RCx Practitioner 1 Bonus credit for engaging an accredited RCx Professional to develop, supervise and verify the RCx process. 	1B
	<ul style="list-style-type: none"> 1 Bonus credit for engaging an accredited RCx Practitioner (Level 1 or Level 2) to carry out the RCx process. 	1B
EU 3	Energy Efficient Practices and Measures	
	<ul style="list-style-type: none"> a) Energy Efficient Practices Maximum 5 credits for implementing each of the following energy saving practices: <ul style="list-style-type: none"> i. Turn on equipment/ systems based on operational hours of buildings. (Operation schedule); ii. Avoid pre-cooling. Switch on centralised A/C system not more than 30 minutes in advance in the morning. (Operation schedules of A/C and building); iii. For premises where the A/C systems are provided with heaters, avoid operating the heaters when the outdoor air temperature is above 20°C. (Operation schedule and/or print screen of BMS showing temperature setting); iv. Turn off lighting if it is not needed. (Operation schedule and/or photograph showing timer setting); v. Cut down number of lamps/ luminaires in area over-lit (over CIBSE recommendation) by artificial lighting and in perimeter area sufficiently lit by natural daylight. (Photographs showing lux measurement and de-lamping); vi. Encourage using the stairs (for one or two floors up or down) rather than taking the lift. (Site photograph showing notice/ poster to encourage tenant/ building user); vii. Shut down some of the lifts and escalators during non-peak hours. (Operation schedule); and viii. Arrange routine cleaning schedule for light diffusers, globes and reflectors to ensure light output efficiency (Cleaning schedule). b) Energy Efficient Measures Maximum 20 credits for demonstrating the following energy efficient measures: <ul style="list-style-type: none"> <u>1. Air-Conditioning System</u> <ul style="list-style-type: none"> i. 4 credits for at least 30% by total cooling capacity serving the building are variable speed air-cooled / water-cooled chiller; ii. 6 credits for at least 50% by total cooling capacity serving the building are high efficiency chiller (compare to BEC 2012's COP at full load in the same category, >9% higher for air-cooled chiller and >6% higher for water-cooled chiller); iii. 6 credits for at least 80% by total cooling capacity of all VRF are high efficiency VRF (>15% higher than BEC 2012's COP at full load in the same category); iv. 6 credits for upkeeping the chiller plant efficiency for at least 50% of total cooling capacity serving the buildings (no degradation in the measured overall COP of chiller plant for the past 12 months as compared to the baseline period. Baseline year can be any year in the past 3rd to 5th years); v. 4 credits for at least 50% of total fresh air flow rate to the building are controlled by CO₂ sensors; vi. 3 credits for at least 50% of air-conditioned areas not frequently used (e.g. meeting room, conference room, etc.) are served by air-conditioning with motion sensors controlling its operation; 	5
		20

Section	Credit Requirement	Credit
5	Energy Use (EU)	51 + 13B
	<ul style="list-style-type: none"> vii. 4 credits for at least 30% of total fresh air flow rate to the building are pre-treated by heat recovery system; viii. 4 credits for at least 30% of air-conditioned areas are served by enthalpy controlled free cooling; ix. 4 credits for at least 50% of total supply air flow rate of all PAU/AHU are supplied by demand control fan (e.g. VSD fans, EC plug fans, etc.); x. 4 credits for at least 50% of total supply air flow rate of all FCU are supplied by demand control fan (e.g. VSD fans, EC plug fans, etc.); xi. 2 credits for at least 50% of total air flow rate of all cooling tower fans are VSD driven; xii. 4 credits for at least 50% of total chilled water flow rate of all chilled water pumps are VSD driven; xiii. 4 credits for at least 50% of total condensing water flow rate of all condensing water pumps are VSD driven; xiv. 3 credits for having physical scale prevention technologies on all water-cooled chillers (e.g. automatic tube cleaning systems, magnetic or electromagnetic devices, etc.); 	
	<p><u>2. Lighting System</u></p> <ul style="list-style-type: none"> i. 4 credits for at least 30% of all areas are served by LED lighting; ii. 4 credits for at least 30% of "Exit" signs (by quantity) are LED lighting; iii. 3 credits for at least 30% of all not normally occupied areas such as lift lobbies, corridors, toilets, refuse rooms, plant rooms, etc. are served by lighting with motion/ occupancy sensor controls/ door contact devices; iv. 3 credits for at least 30% of all areas accessible to daylight are served by lighting with dimming controls to adjust lighting level to suit the space's need; v. 2 credits for having separate lighting controls for the window perimeter and that for the interior. Lighting at the window perimeter can be turned down or off on a sunny day; 	
	<p><u>3. Lift and Escalator System</u></p> <ul style="list-style-type: none"> i. 3 credits for at least 30% of all lift motor power are re-generative lifts; ii. 1 credit for at least 30% of all lift motor power are Variable Voltage Variable Frequency (VVVF) drives and/or direct current motor controlled by solid-state elements for lifts; iii. 1 credit for using destination control system for passenger lifts; iv. 1 credit for at least 30% of all escalator motor power are VVVF drive systems and high gear systems for escalators; v. 1 credit for at least 30% of all escalator motor power are "service-on-demand" (SOD) escalator, which stop or slow down when no user is detected; vi. 1 credit for at least 50% of all lift (by quantity) have automatic switch off lighting and ventilation fan inside the lift car when the lift is in standby/ idle mode; 	
	<p><u>4. Other System</u></p> <ul style="list-style-type: none"> i. 3 credits for at least 50% of all window areas with direct access to daylight are applied with solar window film (i.e. windows that are heavily shaded or not having a direct view to the sky are excluded); ii. 2 credits for adding harmonics filter to reduce total harmonics distortion (THD) in electricity distribution system; iii. 1 credit for having heat pump pre-heating at least 50% of domestic hot water (by quantity of sanitary fitting); iv. 1 credit for having thermostat on/off and/or speed control for exhaust fans serving at least 50% of plant rooms area but exclude those rooms that require continuous exhaust due to health and 	

Section	Credit Requirement	Credit																
5	Energy Use (EU)	51 + 13B																
	safety issues (e.g. chemical storage room, refuse storage room, etc.); and																	
	v. 1 credit for openable windows for mixed mode/ natural ventilation.																	
EU 4	Energy Benchmarking	3 + 2B																
	a) Benchmarking																	
	<u>Compliance Path 1: EMSD Online Benchmarking Tool</u>																	
	For applicable types of buildings project/ individual building project in a building portfolio: Credit(s) can be achieved based on the benchmarking results obtained from EMSD Online Benchmarking Tool.																	
	<table border="1"> <thead> <tr> <th>No. of Credit(s)</th> <th>1</th> <th>2</th> <th>3</th> <th>3+1B</th> <th>3+2B</th> </tr> </thead> <tbody> <tr> <td>Percentile</td> <td>50th</td> <td>40th</td> <td>30th</td> <td>20th</td> <td>10th</td> </tr> </tbody> </table>	No. of Credit(s)	1	2	3	3+1B	3+2B	Percentile	50 th	40 th	30 th	20 th	10 th					
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Percentile	50 th	40 th	30 th	20 th	10 th													
	<u>Compliance Path 2: Recognition Scheme for HK BESTCOM</u>																	
	For Commercial Buildings eligible for the recognition scheme: Credit(s) can be achieved based on the certificate label obtained from HKGBC Benchmarking & Energy Saving Tool – Commercial Buildings (Office/Retail), i.e. HK BESTCOM.																	
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HK BESTCOM	Green	Bronze	Silver	Gold	Platinum													
	b) Self-Improvement	8																
	Credits can be achieved based on the reduction percentage by comparing energy bill/ metering data in the category determined in part a) Benchmarking (Baseline year can be any year in the past 2 nd to 5 th years).																	
	i. For buildings ranked at the 40 th percentile or poorer under EMSD Benchmarking Tool <u>or</u> obtained “Bronze” or below certificate label under HK BESTCOM <u>or</u> not applicable under part a) Benchmarking:																	
	<table border="1"> <thead> <tr> <th>No. of Credits</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>Annual energy use reduction</td> <td>4%</td> <td>5%</td> <td>6%</td> <td>7%</td> <td>8%</td> <td>9%</td> <td>10%</td> </tr> </tbody> </table>	No. of Credits	2	3	4	5	6	7	8	Annual energy use reduction	4%	5%	6%	7%	8%	9%	10%	
No. of Credits	2	3	4	5	6	7	8											
Annual energy use reduction	4%	5%	6%	7%	8%	9%	10%											
	ii. For buildings ranked at the 30 th percentile or better under EMSD Online Benchmarking Tool <u>or</u> obtained “Silver”/ “Gold”/ “Platinum” certificate label under HK BESTCOM:																	
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Annual energy use reduction	3%	3.5%	4%	4.5%	5%	5.5%	6%											
EU 5	Achievement of Energywise and Carbon Reduction Certificate	2																
	Maximum 2 credits for obtaining the following valid Environmental Certificate of Hong Kong Green Organisation Certification (HKGOC):																	
	i. Energywise Certificate; and																	
	ii. Carbon Reduction Certificate.																	

	Section	Credit Requirement	Credit
5	Energy Use (EU)		51 + 13B
EU 6	Educational and Promotional Programme	2 credits for Building Owner/ Building Management Company to educate and advocate the behavioural change of building users in respect of Energy Use by: <ul style="list-style-type: none"> i. Organising educational seminar/ promotion campaign; or ii. Promoting or participating in Hong Kong Green Building Week organised by Construction Industry Council (CIC) and the Hong Kong Green Building Council Limited (HKGBC). 	2
EU 7	Innovative Techniques/ Performance Enhancements	<p>a) Innovative Techniques 1 Bonus credit for applying innovation technique in respect of Energy Use that will improve the performance of the building.</p> <p>b) Performance Enhancements 1 Bonus credit for building with exemplary performance over and above the criteria identified in Energy Use of the BEAM Plus for Existing Buildings.</p>	2B

5 Energy Use

5.1 Energy management and analysis

5.2 Energy efficient practices and measures

5.3 Energy efficient improvement

5.4 Innovations and additions

Background

An objective of BEAM Plus is to encourage thorough evaluation of the performance of building and services system designs, and greater investments into measures that will help to improve the energy performance of existing buildings, so as to reduce energy consumption and the associated environmental impacts, and to reduce summer peak electricity demand.

The assessment of the building and engineering systems is performance based as far as possible, but credits are also given for features which have proven to contribute to energy efficiency and conservation. Credits are given where management, operation and maintenance practices are such as to seek continual improvements in energy performance.

5.1 Energy management and analysis

EU 1 Energy Management

EU 2 Energy Analysis

Background

The management and operation of a building and the way that the tenants use the building can have a major impact on its energy consumption. Energy management should be fully integrated into the organisation's management systems; have monitoring and targeting systems in place based on sub-metering of the energy used; include regular reports and reviews of the monitored data; set targets for energy efficiency improvements supported by an action plan.

5.2 Energy efficient practices and measures

EU 3 Energy Efficient Practices and Measures

Background

One of the major reasons why buildings fail to meet performance expectations is the lack of adequate commissioning of systems and equipment, and the inadequacy of operations and maintenance, commissioning data, and as-installed equipment data and drawings. Successful commissioning shall help systems to properly operate and maintain throughout their life cycle.

5.3 Energy efficient improvement

EU 4 Energy Benchmarking

Background

To further encourage energy efficiency and improvement, this section requires not only benchmarking the project building's energy performance against comparable buildings with similar space use, occupancy and operations, but also to establish saving targets and apply measures for building's continual improvement in energy performance.

5.4 Innovations and additions

EU 5 Achievement of Energywise and Carbon Reduction Certificate

EU 6 Educational and Promotional Programme

EU 7 Innovative Techniques/ Performance Enhancements

Background

It is encouraged to drive behavioural change through educational and promotional programme. This section also allows the applicant to submit for consideration for the award of bonus credits on any innovative techniques or performance enhancements which the applicant deems to provide environmental benefits additional to those already covered in this Manual.

	EU 1	Energy Management
Exclusion		None.
Objective		To encourage high level management to involve in the improvement of energy efficiency and conservation.
Credit Attainable		4
Credit Requirement		<p>a) Energy Management Policy</p> <p>1 credit for providing an energy management policy endorsed by Building Manager or top management of Building Owner/ Building Management Company.</p> <p>b) Energy Management Plan</p> <p>2 credits for providing energy management plan with (i) objective, targets and reporting on progress (if applicable) and (ii) endorsed by Building Manager or top management of Building Owner/ Building Management Company.</p> <p>c) Appointment of Energy Warden</p> <p>1 credit for appointing an Energy Warden in the Building Management Company.</p>
Assessment		<p><u>Criteria</u></p> <p>a) Energy Management Policy</p> <p>The Applicant shall provide an energy management policy endorsed by Building Manager or the top management of Building Owner/ Building Management Company to demonstrate the commitment.</p> <p>b) Energy Management Plan</p> <p>An energy management plan with objective, targets and reporting progress (if applicable) endorsed by Building Manager or top management of Building Owner/ Building Management Company are critical for the success of effective implementation of energy management.</p> <p>c) Appointment of Energy Warden</p> <p>The Applicant shall provide evidence of appointment of at least one Energy Warden as key member in the building management team for the building project/ individual building project in a building portfolio.</p> <p>The Energy Warden shall be a senior staff member appointed as the team leader to be responsible for the overall coordination of the energy</p>

management program. The scope of work for the Energy Warden shall also be indicated.

He/she shall be certified with at least one professional corporate membership qualification (e.g. HKIH, HKIE, HKIS (BS/PFM), RICS (BS/FM), IFMA, HKIFM, BSOMES, or equivalent) or with at least 5 years of relevant working experience.

The Energy Warden shall meet all of the following requirements:

- i. An employee of the Building Management Company; and
- ii. Participated in more than 80% of the property management meetings that are related to energy management.

The Building Manager or top management of Building Owner/ Building Management Company, who approves the energy management plan, cannot act in a dual role as Energy Warden to execute the energy management plan.

Documentation

The Applicant shall provide the following documents:

a) Energy Management Policy

- i. Energy management policy endorsed by the Building Manager or top management of Building Owner/ Building Management Company; and
- ii. Organisation chart demonstrating the line of authority of the Building Manager or top management of Building Owner/ Building Management Company.

b) Energy Management Plan

- i. Energy management plan endorsed by the Building Manager or top management of Building Owner/ Building Management Company; and
- ii. Organisation chart demonstrating the line of authority of the Building Manager or top management of Building Owner/ Building Management Company.

c) Appointment of Energy Warden

- i. Scope of the work for the Energy Warden(s);
- ii. Resume of the Energy Warden(s);
- iii. Professional certificate(s) of the Energy Warden(s) valid at the time of the first assessment submission to demonstrate the professional corporate membership qualification (if applicable);
- iv. Meeting minutes showing the attendance and action items (if any) by the appointed Energy Warden(s); and
- v. Meeting schedule or similar substantiation within the past 12 months at the time of first assessment submission to justify the

Energy Warden(s) participates at least 80% of property management meetings that are related to energy management.

Background

Commitment from top management is crucial for building's energy conservation. The implementation of the energy management plan can be achieved with the support from the top management. BEAM Plus encourages high level management to involve in the improvement of energy efficiency and conservation.

An energy management team should be established to execute energy management activities, and a senior staff member as Energy Warden should also be appointed as the team leader responsible for the overall coordination of the program.

After setting up the energy management policy and an energy management team, an energy management plan should then be formulated. The management plan will be a guide on how the team to improve energy efficiency. It should include the specific reduction targets of energy and cost, as well as the organisation of management resources.

EU 2 Energy Analysis

Exclusion	For part a) only, building project/ individual building project in a building portfolio to compulsorily comply with Building Energy Code (BEC) 2012 or later version.
Objective	To enable and encourage building operators to measure, record, monitor and analyse energy performance of the building's engineering systems, particularly concerning energy use.
Credit Attainable	7 + 9 Bonus
Credit Requirement	<p>a) Data Collection Facilities</p> <p>Maximum 3 credits for providing sub-metering systems for each of the following electrical loads:</p> <ul style="list-style-type: none">i. Air-conditioning system (chiller plant/ air-conditioner) [1];ii. Lighting and small power;iii. Lift and escalator (if any); andiv. Plumbing and drainage. <p>b) Data Collection Record</p> <p>1 credit for providing total building energy consumption data record of at least 24 months for building services under the control of Building Owner/ Building Management Company.</p> <p>c) Energy Audit Report</p> <p>1 credit for conducting energy audit in accordance with the Buildings Energy Efficiency Ordinance (Cap 610) requirement for existing buildings.</p> <p>1 credit for filling up Table (II) to Table (VIII) under the Template 1 on Additional Information to Executive Summary of Energy Audit Report.</p> <p>d) Carbon Audit Report</p> <p>1 credit for conducting carbon audit in accordance with the requirements as stipulated in the credible greenhouse gas (GHG) accounting standard/ guideline.</p> <p>e) Retro-Commissioning</p> <ul style="list-style-type: none">i. Planning and Investigation <p>1 Bonus credit for planning the retro-commissioning (RCx) process and identifying the potential energy saving opportunities (ESOs).</p>

1 Sub-metering provision shall be provided for the chiller plant(s) and/or air-conditioner(s) that serve majority of the building. Chiller plant includes chiller, condensing water pump, chilled water pump and cooling tower (if any).

ii. Implementation

Maximum 3 Bonus credits for implementing the selected ESOs for each of the following systems:

- a. Air-conditioning system;
- b. Electrical system [2];
- c. Lift and escalator (if any) system; and
- d. Plumbing and drainage system.

iii. On-going Commissioning

Maximum 3 Bonus credits for executing on-going commissioning for each of the following systems:

- a. Air-conditioning system;
- b. Electrical system [2];
- c. Lift and escalator (if any) system; and
- d. Plumbing and drainage system.

iv. RCx Professional/ RCx Practitioner

1 Bonus credit for engaging an accredited RCx Professional to develop, supervise and verify the RCx process.

1 Bonus credit for engaging an accredited RCx Practitioner (Level 1 or Level 2) to carry out the RCx process.

Assessment

Criteria

a) Data Collection Facilities

1 credit can be achieved for the provision of sub-metering system for each of the listed electrical loads.

The Applicant shall provide the description of the sub-metering system and data record sample, in order to demonstrate that electricity use pattern and/or operation data for the major systems can be adequately monitored for audit purposes.

Metering shall provide record at intervals of one hour or less and capable to record both consumption and demand (i.e. kW, kVA, kWh). The whole facilities (i.e. meters, BMS, computer) are capable to store all meter data for at least 24 months.

b) Data Collection Record

The Applicant shall provide record of total building energy consumption data for building project/ each individual building project in the building portfolio. The data shall cover the building services under the control of the building management in order to demonstrate

2 Electrical system refers to electrical installation, means fixed equipment, distribution network or accessories for electricity distribution or utilization in the building. Example of ESOs for electrical system includes implementation of power quality management measures.

that proper record keeping practice has been implemented. It is good practice to have energy consumption data record separately for different system types of major electrical load. However, this is not an assessment criterion for this credit. One electrical meter that records several different system types of major electrical load can be accepted in this credit.

c) Energy Audit Report

For the building project/ each individual building project in the building portfolio, the Applicant shall provide an energy audit report in accordance with the Buildings Energy Efficiency Ordinance (Cap 610) requirement for existing buildings and/or filled Table (II) to Table (VIII) in Template 1 [3] on Additional Information to Executive Summary of Energy Audit Report. Relevant calculation and/or measured data as supporting to the filled data in Template 1 shall also be provided. The energy audit report shall be endorsed by a Registered Energy Assessor (REA).

The date of completion of energy audit [4] must be within the past 5 years at the time of first assessment submission with the energy audit conducted using the latest Energy Audit Code (EAC) edition available at the date of commencement of energy audit [5].

d) Carbon Audit Report

The Applicant shall provide a carbon audit or GHG emissions audit report for the building project/ building portfolio and shall be in accordance with one of following credible GHG accounting standards/ guidelines, or equivalent:

- Guidelines to Account for and Report on Greenhouse Gas Emissions and Removals for Buildings (Commercial, Residential or Intuitional Purposes) in Hong Kong, issued by Electrical & Mechanical Services Department (EMSD) and Environmental Protection Department (EPD); or
- Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (revised edition), issued by World Business Council for Sustainable Development and World Resources Institute; or
- International Organization for Standardisation (ISO) 14064-1 Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals.

The boundary of the GHG accounting and reporting process shall be based on the “physical boundary” of building project/ individual building project in a building portfolio.

3 Template for Additional Information (adoption on voluntary basis, refer to TG-EAC clause 8.5), Energy Audit Code (EAC) 2012 Edition.

4 The date of completion of the energy audit shall be the same date as indicated under item (A)(1) in Part 1 of the Executive Summary of Energy Audit Report for Energy Audit Code (Form EE-EAes) published by EMSD.

5 The date of commencement of energy audit shall be the same date as indicated under item (A)(2) in Part 1 of the Form EE-EAes published by EMSD.

The report shall be endorsed by a Qualified Service Provider (QSP) or equivalent (e.g. qualified person recognised by the Carbon Reduction Certificates Scheme under the Type I category).

Note: In the case of portfolio assessment, the reporting period of the carbon audit report(s) shall be consistent for all building projects in the portfolio.

e) Retro-Commissioning

The RCx should make reference to credible guidelines, such as the Technical Guidelines on Retro-commissioning issued by EMSD.

i. Planning and Investigation

The Applicant shall provide an action plan of the RCx process addressing the following:

- Summary of findings during the information collection and preliminary analysis of operating data, and plan for the subsequent activities in RCx for optimizing the existing building; and
- List of potential ESOs, cost/ benefit analysis on the proposed ESOs, implementation details, measurement and verification methods, and any anticipated disturbance to normal services operation to discuss with the relevant stakeholders.

Note: The action plan should at minimum cover the building services systems to be attempted in subsequent part of credits.

ii. Implementation

1 Bonus credit can be achieved by implementing the selected ESOs for each of the listed system.

The Applicant shall provide a report describing the outcomes of the implemented ESOs, energy saving verification for the implemented ESOs, records of implementation and testing and commissioning records following changes to systems and equipment.

iii. On-going commissioning

1 Bonus credit can be achieved by carrying out on-going commissioning for each of the listed system.

The Applicant shall provide on-going commissioning plan and records for at least the past 12 months at the time of first assessment submission, which detailing:

- Person-in-charge;
- Monitoring requirement (i.e. type of measurement, measurement device, monitoring frequency and duration and acceptable values);
- Record of measured parameters; and

- References used to evaluate performance.

The work records required to demonstrate the implementation of on-going commissioning shall follow the on-going commissioning plan.

iv. RCx Professional/ RCx Practitioner

The Applicant shall provide evidence showing that the appointed personnel are with valid RCx Professional/ RCx Practitioner (Level 1 or Level 2) credential.

To achieve the first Bonus credit on RCx Professional, the scope of RCx process carried out by the RCx Professional should at least cover planning, investigation and implementation stages. The submitted plan(s) and report(s) on the RCx process shall be endorsed by the appointed RCx Professional(s).

To achieve the second Bonus credit on RCx Practitioner, the submitted testing and commissioning records on the RCx process shall be endorsed by the appointed RCx Practitioner(s).

Documentation

The Applicant shall provide the following documents:

a) Data Collection Facilities

- i. Drawings, as-built electrical schematic;
- ii. Manufacturer technical specification, technical data sheets for meter, transducers, and sensors;
- iii. Operation manual;
- iv. Testing and commissioning records;
- v. Data record samples; and
- vi. Record photographs.

b) Data Collection Record

- i. Energy consumption data record for total building energy loads (e.g. electricity bills, BMS log data, metering log data, manually recorded data); and
- ii. Spreadsheet summarising the energy consumption data according to major systems with monthly bar chart plotted.

c) Energy Audit Report

- i. Energy audit report(s) endorsed by REA(s);
- ii. Filled Table (II) to Table (VIII) in Template 1 on Additional Information to Executive Summary of Energy Audit Report; and
- iii. Calculation and/or measured data as supporting to the data filled in the template.

d) Carbon Audit Report

- i. Carbon audit or GHG emission audit report(s) endorsed by a QSP(s); and
- ii. Supporting showing the engaged QSP with active qualification status.

e) Retro-Commissioning

- i. Planning and Investigation
 - Action plan of the RCx process.
- ii. Implementation
 - Report summarises the implementation of ESOs;
 - Implementation records (e.g. delivery order, contract document, record photographs); and
 - Testing and commissioning records.
- iii. On-going Commissioning
 - On-going commissioning plan;
 - On-going commissioning records for the past 12 months (e.g. reports, measured data, record photographs, etc.); and
 - Undertaking letter endorsed by Building Manager or top management of Building Owner/ Building Management Company showing the commitment of carrying out on-going commissioning within the next 5 years.
- iv. RCx Professional/ RCx Practitioner
 - Name of the personnel appointed as the RCx Professional/ RCx Practitioner;
 - Screen capture from the HKGBC RCx directory showing the engaged RCx Professional/ RCx Practitioner with active qualification status;
 - Plan(s) and report(s) endorsed by the RCx Professional(s); and
 - Testing and commissioning records endorsed by the RCx Practitioner(s).

Background

Surveys of a large number of buildings in Hong Kong [6] revealed that buildings are in general insufficiently equipped with measuring and monitoring devices for measurement of energy performance. This makes it particularly difficult to improve the energy efficiency of buildings and major plant, such as the central chiller plant.

Opportunities for reducing energy consumption can be identified only if it is possible to monitor performance of the systems. Good monitoring systems can allow better control of part load performance, not only improving efficiency, but also improving the control of the building's thermal comfort conditions. Plant control can be altered and the results monitored to show how energy consumption changes. Unseen plant

6 Yik F W H, Chiu T W. Measuring instruments in chiller plants and uncertainties in performance evaluation. Transactions, The Hong Kong Institution of Engineers, 5(3) 95-99.

faults, which are not evident during routine maintenance, can be identified from analysis of performance trend data. Control problems can be detected and control strategies improved to match the building demand.

The cost of instrumentation is not significant when compared with installation costs and the accuracy should be such as to provide meaningful readings. The payback on improved performance can be very high taking into account the reduction in electricity consumption and demand charges resulting from more efficient plant operation.

Similar to the function of financial audit to a company, energy audit needs to be conducted at regular intervals to provide the building management with a clear picture about the types and quantities of energy being used in a building and for what purposes, whether energy has been used efficiently and effectively, and the room for improvements.

Buildings often undergo operational and occupancy changes. Since building systems are highly interactive, minor problems/ deviation can lead to significant impact on the overall energy efficiency. Proper “tuning” of building is needed to maintain the optimal performance of building systems. Retro-commissioning (RCx) is a systematic process to periodically check the performances of an existing building, with the focus on optimizing existing equipment. RCx process typically involves four phases: planning, investigation, implementation and on-going commissioning. Begins with data collection and on-site measurement, follow by analysis of building operational condition, and then come up with proposed Energy Saving Opportunities (ESOs). Through the implementation of ESOs, the building’s energy performance and indoor environment quality can be enhanced [7].

7 Electrical and Mechanical Services Department. Retro-commissioning Resources Centre, Retrieved August 2021, from <https://www.rcxrc.emsd.gov.hk/en/>

	EU 3	Energy Efficient Practices and Measures
Exclusion	None.	
Objective	To encourage energy management practices and the implementation of energy efficient measures to improve building energy performance.	
Credit Attainable	25	
Credit Requirement	a) Energy Efficient Practices	
	Maximum 5 credits for implementing each of the following energy saving practices:	
	i.	Turn on equipment/ systems based on operational hours of buildings. (Operation schedule);
	ii.	Avoid pre-cooling. Switch on centralised A/C system not more than 30 minutes in advance in the morning. (Operation schedules of A/C and building);
	iii.	For premises where the A/C systems are provided with heaters, avoid operating the heaters when the outdoor air temperature is above 20°C. (Operation schedule and/or print screen of BMS showing temperature setting);
	iv.	Turn off lighting if it is not needed. (Operation schedule and/or photograph showing timer setting);
	v.	Cut down number of lamps/ luminaires in area over-lit (over CIBSE recommendation) by artificial lighting and in perimeter area sufficiently lit by natural daylight. (Photographs showing lux measurement and de-lamping);
	vi.	Encourage using the stairs (for one or two floors up or down) rather than taking the lift. (Site photograph showing notice/poster to encourage tenant/ building user);
	vii.	Shut down some of the lifts and escalators during non-peak hours. (Operation schedule); and
	viii.	Arrange routine cleaning schedule for light diffusers, globes and reflectors to ensure light output efficiency (Cleaning schedule).
	b) Energy Efficient Measures	
	Maximum 20 credits for demonstrating the following energy efficient measures:	
	<u>1. Air-Conditioning System</u>	
	i.	4 credits for at least 30% by total cooling capacity serving the building are variable speed air-cooled / water-cooled chiller;
	ii.	6 credits for at least 50% by total cooling capacity serving the building are high efficiency chiller (compare to BEC 2012's COP at full load in the same category, >9% higher for air-cooled chiller and >6% higher for water-cooled chiller);

- iii. 6 credits for at least 80% by total cooling capacity of all VRF are high efficiency VRF (>15% higher than BEC 2012's COP at full load in the same category);
- iv. 6 credits for upkeeping the chiller plant efficiency for at least 50% of total cooling capacity serving the buildings (no degradation in the measured overall COP of chiller plant for the past 12 months as compared to the baseline period. Baseline year can be any year in the past 3rd to 5th years);
- v. 4 credits for at least 50% of total fresh air flow rate to the building are controlled by CO₂ sensors;
- vi. 3 credits for at least 50% of air-conditioned areas not frequently used (e.g. meeting room, conference room, etc.) are served by air-conditioning with motion sensors controlling its operation;
- vii. 4 credits for at least 30% of total fresh air flow rate to the building are pre-treated by heat recovery system;
- viii. 4 credits for at least 30% of air-conditioned areas are served by enthalpy controlled free cooling [1];
- ix. 4 credits for at least 50% of total supply air flow rate of all PAU/ AHU are supplied by demand control fan (e.g. VSD fans, EC plug fans, etc.);
- x. 4 credits for at least 50% of total supply air flow rate of all FCU are supplied by demand control fan (e.g. VSD fans, EC plug fans, etc.);
- xi. 2 credits for at least 50% of total air flow rate of all cooling tower fans are VSD driven;
- xii. 4 credits for at least 50% of total chilled water flow rate of all chilled water pumps are VSD driven;
- xiii. 4 credits for at least 50% of total condensing water flow rate of all condensing water pumps are VSD driven;
- xiv. 3 credits for having physical scale prevention technologies on all water-cooled chillers (e.g. automatic tube cleaning systems, magnetic or electromagnetic devices, etc.);

2. Lighting System

- i. 4 credits for at least 30% of all areas [2] are served by LED lighting;
- ii. 4 credits for at least 30% of "Exit" signs (by quantity) are LED lighting;
- iii. 3 credits for at least 30% of all not normally occupied areas such as lift lobbies, corridors, toilets, refuse rooms, plant rooms, etc. are served by lighting with motion/ occupancy sensor controls/ door contact devices [3];
- iv. 3 credits for at least 30% of all areas [2] accessible to daylight are served by lighting with dimming controls to adjust lighting level to suit the space's need;

1 Free cooling system should include all supply air pre-treat equipment (e.g. PAU) serving the air-conditioned areas.
2 "All areas" refer to the common areas within the premises and the areas in which the management and energy uses are under the control of the building management for those multi-tenancy buildings.
3 Applicant shall observe the relevant government regulations such as fire regulations.

- v. 2 credits for having separate lighting controls for the window perimeter and that for the interior. Lighting at the window perimeter can be turned down or off on a sunny day;

3. Lift and Escalator System

- i. 3 credits for at least 30% of all lift motor power are regenerative lifts;
- ii. 1 credit for at least 30% of all lift motor power are Variable Voltage Variable Frequency (VVVF) drives and/or direct current motor controlled by solid-state elements for lifts;
- iii. 1 credit for using destination control system for passenger lifts;
- iv. 1 credit for at least 30% of all escalator motor power are VVVF drive systems and high gear systems for escalators;
- v. 1 credit for at least 30% of all escalator motor power are “service-on-demand” (SOD) escalator, which stop or slow down when no user is detected;
- vi. 1 credit for at least 50% of all lift (by quantity) have automatic switch off lighting and ventilation fan inside the lift car when the lift is in standby/ idle mode;

4. Other System

- i. 3 credits for at least 50% of all window areas with direct access to daylight are applied with solar window film (i.e. windows that are heavily shaded or not having a direct view to the sky are excluded);
- ii. 2 credits for adding harmonics filter to reduce total harmonics distortion (THD) in electricity distribution system;
- iii. 1 credit for having heat pump pre-heating at least 50% of domestic hot water (by quantity of sanitary fitting);
- iv. 1 credit for having thermostat on/off and/or speed control for exhaust fans serving at least 50% of plant rooms area but exclude those rooms that require continuous exhaust due to health and safety issues (e.g. chemical storage room, refuse storage room, etc.); and
- v. 1 credit for openable windows for mixed mode/ natural ventilation.

Assessment

Criteria

a) Energy Efficient Practices

1 credit can be achieved for implementing each of the listed energy saving practices.

The Applicant shall provide a short report endorsed by Building Manager with the following elements as a minimum for building project/ each individual building project in the building portfolio:

- i. Brief description of how the energy saving practices are implemented; and
- ii. Supporting photographs and/or documentation, such as

equipment operation schedule, print screen of BMS and cleaning schedule. Suggested supporting is included in the bracket stated in the credit requirement.

b) Energy Efficient Measures

The Applicant shall provide a short report endorsed by Building Manager with the following elements as a minimum for building project/ each individual building project in the building portfolio:

- i. A table showing the energy saving measures installed; and
- ii. Supporting photographs and documentation, such as contract, agreement, drawings, equipment schedule, manufacturer specification/ catalogue to demonstrate the provision of measures.

For building project recertifies for the EU aspect under Selective Scheme of EB v2.0, evidence shall be provided to demonstrate the energy efficient measure(s) submitted for assessment is different from those achieved in past certification.

Documentation

The Applicant shall provide the following documents:

a) Energy Efficient Practices and b) Energy Efficient Measures

- i. A short report on the narrative of the practices and measures endorsed by Building Manager; and
- ii. Evidence from past certification (e.g. extract of FA report, documents submitted for assessment, etc.) (if any) (applicable to part b) Energy Efficient Measures).

**Other Energy
Efficient Features**

For energy efficient practices and measures not listed above, the Applicant can submit the proposed practices and measures for BSL TRC consideration.

The Applicant shall submit the documentation stated in the requirement. Number of credit(s) to be achieved is subject to BSL TRC's final approval based on the scale of practices and measures and the energy impact to the building and/or the innovation of the proposed features.

EU 4 Energy Benchmarking

Exclusion For part a) only, building types not covered by EMSD Online Benchmarking Tool.

Objective To reduce the consumption of non-renewable energy resources and the consequent emissions of carbon dioxide (CO₂) to the atmosphere and encourage energy conservation and methods to reduce peak electricity demand.

Credit Attainable 11 + 2 Bonus

Credit Requirement a) Benchmarking

Compliance Path 1: EMSD Online Benchmarking Tool

For applicable types of buildings project/ individual building project in a building portfolio:

Credit(s) can be achieved based on the benchmarking results obtained from EMSD Online Benchmarking Tool.

No. of Credit(s)	1	2	3	3+1B	3+2B
Percentile	50 th	40 th	30 th	20 th	10 th

Compliance Path 2: Recognition Scheme for HK BESTCOM

For Commercial Buildings eligible for the recognition scheme:

Credit(s) can be achieved based on the certificate label obtained from HKGBC Benchmarking and Energy Saving Tool - Commercial Buildings (Office/Retail), i.e. HK BESTCOM.

No. of Credit(s)	1	2	3	3+1B	3+2B
HK BESTCOM	Green	Bronze	Silver	Gold	Platinum

b) Self-Improvement

Credits can be achieved based on the reduction percentage by comparing energy bill/ metering data in the category determined in part a) Benchmarking (Baseline year can be any year in the past 2nd to 5th years).

- i. For buildings ranked at the 40th percentile or poorer under EMSD Online Benchmarking Tool or obtained “Bronze” or below certificate label under HK BESTCOM or not applicable under part a) Benchmarking:

No. of Credits	2	3	4	5	6	7	8
Annual energy use reduction	4%	5%	6%	7%	8%	9%	10%

- ii. For buildings ranked at the 30th percentile or better under EMSD Online Benchmarking Tool or obtained “Silver”/ “Gold”/ “Platinum” certificate label under HK BESTCOM:

No. of Credits	2	3	4	5	6	7	8
Annual energy use reduction	3%	3.5%	4%	4.5%	5%	5.5%	6%

Assessment

Criteria

a) Benchmarking

The number of credit(s) to be achieved shall be determined by referencing to the cumulative percentage obtained from EMSD Online Benchmarking Tool [1] or certificate label obtained from HK BESTCOM or equivalent. The data used for the EMSD online benchmarking shall be within the past 12 months at the time of first assessment submission.

b) Self-Improvement

The number of credits to be achieved shall be determined by referencing to the reduction percentage using the energy bills/ metering data in the category determined in part a) Benchmarking. Data in the past 12 months at the time of first assessment submission shall be used to compare with the Baseline year. Baseline year can be any year in the past 2nd to 5th years.

Note: In the case of portfolio assessment, the number of credit points awarded for the portfolio shall be based on the individual building project that achieves the least credit point(s) in the respective credits of EU 4a and EU 4b.

Documentation

The Applicant shall provide the following documents for building project/ each individual building project in the building portfolio:

a) Benchmarking

1 Electrical and Mechanical Services Department. Online Benchmarking Tools. Retrieved August 2021, from <https://ecib.emsd.gov.hk/index.php/en/>.

Compliance Path 1: EMSD Online Benchmarking Tool

- i. Screenshots of the input for the benchmarking tool and relevant supporting documents; and
- ii. Result obtained from the EMSD Online Benchmarking Tool.

Compliance Path 2: Recognition Scheme for HK BESTCOM

- i. Valid HK BESTCOM certificate(s) issued by HKGBC.

b) Self-Improvement

- i. Spreadsheet showing the energy consumption extracted from the energy bills/ metering data and relevant supporting documents; and
- ii. Calculation showing the percentage of reduction.

Background

BEAM Plus encourages energy-efficient buildings and reduction in maximum electricity demand. To further encourage energy efficiency and improvement, this section requires not only benchmarking the project building's energy performance against comparable buildings with similar space use, occupancy and operations, but also to establish saving targets for building's continual improvement in energy performance.

	EU 5	Achievement of Energywise and Carbon Reduction Certificate
Exclusion	None.	
Objective	To encourage participants to adopt measures to save energy within their establishments and recognise the energy saving efforts of those companies and organisations.	
Credit Attainable	2	
Credit Requirement	Maximum 2 credits for obtaining the following valid Environmental Certificate of Hong Kong Green Organisation Certification (HKGOC): i. Energywise Certificate; and ii. Carbon Reduction Certificate.	
Assessment	<u>Criteria</u> 1 credit can be achieved for obtaining each of the listed certificates. The Applicant shall provide documentation to demonstrate that the Energywise Certificate in “Good Level” or “Excellence Level” or Carbon Reduction Certificate are obtained in the past 12 months or valid at the time of first assessment submission. <u>Documentation</u> The Applicant shall provide the following document: i. Copy of the HKGOC Certificate(s).	
Background	HKGOC is led by the Environmental Campaign Committee alongside the EPD in conjunction with the other nine organisations. HKGOC aims to encourage businesses and organisations to adopt environmental practices, benchmark green organisations with achievement in green management, and recognise and acknowledge the efforts of and commitments to the environment [1].	

1 Environmental Campaign Committee (ECC). The Hong Kong Awards for Environmental Excellence. Retrieved August 2021, from <https://www.ecc.org.hk/hkaee/eindex.html>.

	EU 6	Educational and Promotional Programme
Exclusion		None.
Objective		To encourage behavioural change through educational and promotional programme.
Credit Attainable		2
Credit Requirement		2 credits for Building Owner/ Building Management Company to educate and advocate the behavioural change of building users in respect of Energy Use by: <ul style="list-style-type: none">i. Organising educational seminar/ promotion campaign; orii. Promoting or participating in Hong Kong Green Building Week organised by Construction Industry Council (CIC) and the Hong Kong Green Building Council Limited (HKGBC).
Assessment		<p><u>Criteria</u></p> <p>Credits can be achieved when the Applicant organises at least one of the activities within the past 12 months at the time of first assessment submission.</p> <p><u>Documentation</u></p> <p>The Applicant shall provide the following documents:</p> <ul style="list-style-type: none">i. Promotional materials such as posters, notice of the programme together with indication describing the name and date of the event; andii. Record photographs, screen capture or other equivalent supporting to show the promotion or participation of the programme by the building users.
Background		BEAM Plus encourages the Applicant to transfer knowledge through seminar or exhibition for building users, so that they can acquire necessary knowledge, shape the standings and behaviour.

	EU 7 Innovative Techniques/ Performance Enhancements
Exclusion	None.
Objective	To encourage adoption of practices, new technologies and techniques in respect of Energy Use that have yet to find application in Hong Kong or provide for performance enhancements over and above stated performance criteria in BEAM Plus for Existing Buildings.
Credit Attainable	2 Bonus
Credit Requirement	a) Innovative Techniques 1 Bonus credit for applying innovation technique in respect of Energy Use that will improve the performance of the building. b) Performance Enhancements 1 Bonus credit for building with exemplary performance over and above the criteria identified in Energy Use of the BEAM Plus for Existing Buildings.
Assessment	<u>Criteria</u> a) Innovative Techniques The onus will be on the Applicant to present the evidence of the application of new practices, technologies and techniques and the associated environmental benefits. The Applicant shall provide a submission which identifies the intent of the proposed innovative technique and quantifies environmental benefits through its application. The Assessor shall refer the submission to BSL's Technical Review Committee (TRC) who will consider each application on its merit. Some of the innovation techniques include: <ol style="list-style-type: none">i. Conducting research and development or participating in competition with published paper related to energy aspects of the assessed building project/ building portfolio (copy of published paper, evidence to demonstrate publication in recognised channel);ii. Renewable energy system, where at least 0.2% of building energy consumption in communal area is obtained from renewable energy sources. The total building energy consumption in communal areas shall be referenced to any one selected year over the past 5 years (calculation for system operate less than 1 year or measurement for system operate more than 1 year [1], manufacturer specification/ catalogue, as-

1 The calculation/ measurement shall take due account of the diurnal and seasonal variations in the external environmental conditions (e.g. solar intensity and wind speed and direction) and in the demand for the electricity and/or services generated by the systems. Any energy use and losses by the systems shall be discounted from their output.

- built drawings, record photographs of the renewable energy system);
- iii. Renewable Energy Certificate (REC), where the building project/building portfolio provides REC that could offset at least 1.0% of building energy consumption in communal area. The total building energy consumption in communal areas shall be referenced to any one selected year over the past 5 years (REC issued by CLP [2] or HK Electric [3] within the past 5 years at the time of first submission);
 - iv. Separate energy charges, where separate charges are paid by the building users for their own energy consumption within their spaces, including air-conditioning, lighting, small power, etc. (as-built electrical schematic, as-built MVAC water side schematic, location layouts, energy consumption records/ meter readings/ logbook/ printed output, payment records showing the building users pay for their own energy consumption, manufacturer's technical specification/ technical data for tenant electricity meters and/or thermal energy meters for chilled water sub-metering, record photographs showing meter installation); and
 - v. Digital platform for building users to understand the energy usage within their spaces (operation manual, record photographs and/or print screen showing the digital platform).

1 Bonus credit can be achieved for each of the innovation technique listed above.

b) Performance Enhancements

The onus will be on the Applicant to present evidence of the performance compared to the existing criteria.

The Applicant shall provide a submission which identifies the proposed application and quantifies its exemplary performance over and above the criteria identified in Energy Use of the BEAM Plus for Existing Buildings. The Assessor shall refer the submission to BSL's TRC who will consider each application on its merit. The Bonus credit shall be granted at the sole discretion of BSL's TRC.

Documentation

The Applicant shall provide the following documents:

a) Innovative Techniques

- i. Narrative to indicate the innovative techniques will improve the energy performance of the building(s);

2 CLP Renewable Energy Certificates, Retrieved August 2021, from <https://www.clp.com.hk/en/community-and-environment/renewable-schemes/renewable-energy-certificates>

3 HK Electric. Renewable Energy Certificates, Retrieved August 2021, from <https://www.hkelectric.com/en/smart-power-services/renewable-energy-certificates>

- ii. Calculation with the relevant supporting document (e.g. energy bills) quantifying the environmental benefits through application of proposed innovation technique [4]; and
- iii. Evidence, such as record photographs, drawings, manufacturer technical data, etc., to demonstrate the application of innovative techniques. Supporting is included in the bracket stated in the credit requirement.

b) Performance Enhancements

- i. Calculation quantifying exemplary performance over and above the criteria identified in Energy Use of the BEAM Plus for Existing Buildings through proposed application; and
- ii. Evidence, such as record photographs, drawings, manufacturer technical data, etc, to demonstrate the application of performance enhancements.

Background

BEAM Plus encourages the Applicant to incorporate innovative techniques and green practices into their building so as to realise the associated environmental benefits, which related to sustainable living, improved comfort, lower water consumption, reduced pollution.

4 Calculation on quantifying the environmental benefits is not required for the following innovative techniques:
(i) Conducting research and development or participating in competition with published paper, (iv) Separate energy charges, and (v) Digital platform for building users to understand the energy usage within their spaces.

8 Appendix

8.1 Glossary

Alternative Assessment Method	Proposed criteria and assessment method submitted by Applicants when seeking alternative means of compliance with a particular credit.
Appeals	The process whereby Applicant's may appeal, a separate published charge, the allocation of individual credits, with First Appeal submissions reviewed by the BSL TRC and Final Appeals handled by HKGBC.
Applicant	The party authorised to seek BEAM Plus certification of the project (typically the client, occupier, tenant or representative therefore) whose will form a contractual relationship with HKGBC and BSL in the certification process.
Baseline	A line serving as the basis for comparison in Performance-based approach.
BEAM Assessors	A person engaged to conduct an independent assessment of the Project submissions on behalf of BSL and validated by BSL TRC.
BEAM Plus Category	In BEAM Plus for Existing Buildings, BEAM Plus Section refers to assessment sections such as MAN P1 - Green Purchasing Plan, MWA P1 - Waste Recycling Facilities, etc.
BEAM Plus Framework	The rating systems, assessment standards, credit criteria, training and examination processes applied to certification and accreditation under BEAM Plus for New Buildings, Existing Buildings and Interiors.
BEAM Plus Grading	The outcome of a certification assessment of a building project expressed as a performance level of Bronze (above average), Silver (good), Gold (very good) or Platinum (excellent).
BEAM Pro	A trained professional engaged by the Applicant to help integrate sustainability measures into the project and facilitate information submissions for assessment.
BEAM Affiliate	A BEAM Affiliate is a person accredited by the HKGBC as being competent to support green building design, construction and operations. The credential provides an individual who cannot yet meet the BEAM Pro requirement with an alternative route to become a BEAM Pro.
BEAM Society Limited	The independent, not-for-profit, member-based organisation that owns and operates BEAM Plus and undertakes assessments, training and examinations as a basis for certification and accreditation by HKGBC.
BSL Coordinator	An officer of the BSL that maintains day-to-day liaisons between the Applicant, the BSL, and the assigned BAS for the project.
Building Management System	BMS uses computer-based monitoring to coordinate, organise, and optimise building control subsystems, including HVAC, lighting, equipment scheduling, and alarm reporting. Sometimes known as Building Automation System.

Building Manager	A person that has the function of controlling or directing the management, operation and maintenance of individual building project/each building project in the building portfolio.
Building Portfolio	A group of permanent or semi-permanent building projects.
Building Project	Tower, complex, arcade, structure, etc., that is either permanent or semi-permanent on which the BEAM Plus Existing Buildings Assessment is carried out.
Central Building Services	Independent central plant equipment (i.e. air-conditioning, lighting, electrical installations and lifts and escalators) in the building project that are controlled by the landlord and not by the Applicant.
Certificate Validity	The duration for which a BEAM Plus certificate and grading remain effective and officially recognised by the BSL.
Certification Scope	The construction floor area of the project, defined by the footprint or boundary of the space being leased or occupied, and its associated interfaces with its surroundings.
Chloro-fluorocarbons	CFCs cause ozone depletion when released into the atmosphere.
Commissioning	The process of putting Building Services systems into active service. This includes testing and adjusting HVAC, electrical, plumbing and other systems to assure proper balancing and adherence to design criteria, and instructing building representatives in their use.
Compliance	Demonstration of fulfilment of a particular credit requirement under BEAM Plus, furnished through the provision of information as specified in the relevant grading system and submission template.
Credit	In BEAM Plus Existing Buildings, Credit refers to credit(s) allocated for each BEAM Plus Section and credits are used to determine the category grade and overall grade according to the number of credits achieved.
Credit Interpretation Request	The process whereby Applicants can seek technical and administrative guidance from BSL TRC on the application of BEAM Plus credits to their projects.
Embodied energy	Embodied energy is the energy used during the entire life cycle of a product, including its manufacture, transportation, and disposal, as well as the inherent energy captured within the product itself.
Environmentally Manufactured Materials	Materials that are produced by manufacturer with a recognised environmental management system, EMS in place (such as ISO 14001:2004). The EMS shall help the manufacturer minimise how their operations (processes etc.) negatively affect the environment (i.e. cause adverse changes to air, water, or land), comply with applicable laws, regulations, and other environmentally oriented requirements, and continually improve in the above.
Exfiltration	Air leakage through cracks and interstices and through the ceilings, floors, walls and the envelope.
Exhaust air	Air is removed from a space and discharged outside the building project by mechanical or natural ventilation systems.

First Assessment Submission	<p>First assessment submission refers to the date when the initial assessment is formally accepted by BSL.</p> <p>For example, if the project has both PA and FA, then it would be the date when BSL formally accepts the project for PA submission. If the project has only FA, then it will be the date when BSL formally accepts the project for FA submission.</p>
FSC Certification	<p>A certification system for timber products which confirms that timber has been harvested in a sustainable manner.</p>
Global Warming Potential	<p>GWP provides a measure of the potential for damage that a chemical has relative to one unit of carbon dioxide, the primary greenhouse gas.</p>
Green cleaning	<p>Green cleaning is the use of cleaning products and practices that have lower environmental impacts than conventional products and practices.</p>
Hong Kong Green Building Council Limited	<p>The industry body established in 2009 to coordinate efforts towards green building in Hong Kong. HKGBC certifies BEAM Plus projects and accredits BEAM Pro and BAS.</p>
Hydro-chlorofluorocarbons	<p>HCFCs cause ozone depletion when released into the atmosphere.</p>
Hydro-fluorocarbons	<p>HFCs are commonly used to replace HCFC refrigerants to reduce the OPD, however HFCs refrigerants have a high GWP.</p>
Individual building assessment	<p>A single building project attempting a single BEAM Plus Existing Buildings Assessment.</p>
Infiltration	<p>Infiltration is uncontrolled air leakage into conditioned spaces through unintentional openings in ceilings, floors, and walls from unconditioned spaces or the outdoors.</p>
Management, Operation & Maintenance (MO&M)	<p>Series of programme(s) formulated by the management company with the purpose of cleaning, maintaining, operating, managing, servicing, etc. the building project in good condition.</p>
MVAC	<p>Mechanical ventilation and air-conditioning installations.</p>
Normally Occupied Areas	<p>Normally occupied areas are enclosed areas where people normally spend more than 1 hour there. Examples include activity room, auditorium, conference room, classroom, exhibition hall, hotel guest room, hotel lobby, indoor swimming pool and sport hall, library, lecture theatre, office, restaurant, retail shop, etc.</p>
Not Normally Occupied Areas	<p>Not normally occupied areas are enclosed areas where people normally stay less than 1 hour there. Examples includes corridors, entrance and lift lobby (except hotel lobby), locker room, plantroom, stairway etc.</p>
Ozone Depleting Potential	<p>ODP of a chemical compound is the relative amount of degradation to the ozone layer it can cause.</p>
Performance Categories	<p>The areas into which BEAM Plus criteria are divided based on their influence on the sustainability performance of a project (site, design and construction management, materials, energy use, water use, indoor environmental quality, innovations and performance enhancements).</p>

Potable Water	Water that is safe enough to be consumed by humans, or used with low risk of immediate or long-term harm. Although the quality of water supplied to buildings in Hong Kong is strictly controlled, the quality of water drawn from consumers' taps may sometimes be affected by the condition of the inside plumbing such as discolouration from rusty pipes. Consumers are responsible for proper maintenance of internal plumbing and are required to engage a licensed plumber if the water quality is found to be affected due to defects in the inside plumbing.
Pre-requisite	Assigned credits, either legal requirements or key performance aspects (relating to management, materials aspects and water use), that must be satisfied to start the BEAM Plus assessment and obtain the certification.
Project space	The assessment area of the BEAM Plus for Existing Buildings certified area.
Registration/ Registered Projects	The first step in seeking formal certification under BEAM Plus. Registered projects, subject to payment of a specified fee, are listed within the BSL projects database for public information.
Submissions Documents	Documentation (including drawings, specifications, photographs, reports, signed confirmations, etc., as specified under each BEAM Plus credit) required by the BSL to conduct the certification assessment of a project.
Technical Review Committee	The committee within the BSL that oversees the implementation and progress monitoring of BEAM Plus certification assessments, and resolves technical issues and Credit Interpretation Request.
Unitary air- conditioning unit	As defined in decentralised air-conditioning system.
Variable refrigerant flow	Variable refrigerant volume flow in a unitary air-conditioner where the cooling supply to the conditioned space is adjusted by modulating the flow of refrigerant.
Variable speed drive	A motor drive that controls the motor speed over a continuous range. This usually refers to the motor drive for HVAC's fans or pumps.