

**Relevant Extract From
BEAM Plus Interiors
Commerical, Retail and Institutional**

Energy Use (EU)

(EU 5) Metering And Monitoring

3 Credits for provided sub-metering that separately records and monitors of electricity use by the following equipment installed by the Applicant and serving the project space (at the minimum):

- 1) HVAC&R systems (including supplementary air conditioning. If any);
- 2) Lighting systems;
- 3) Small power (plug loads);
- 4) Lifts and escalators (if any);
- 5) Hot water systems (if any);
- 6) Pools, Spa, whirlpools (if any);
- 7) Loads associated with server room (if any);
- 8) High electrical power equipment (>25k VA, if any).

1 credit for providing thermal energy metering and monitoring of the chilled water consumption.

Indoor Environmental Quality (IEQ)

(IEQ 8) Interior Lighting Quality

3 credits where the uniformity, glare index and colour rendering index (1 credit for each parameter) at all workstations can comply with CIBSE requirements.

(IEQ 9) Natural Lighting

1 credit where 75% of workstations or seating are located in an area of floor with natural light illuminance level of 100 lux.

2 credit where 85% of workstations or seating is located in an area of floor with natural light illuminance level of 100 lux.

EU1 Energy Performance - Performance-Based-Approach

Lighting system

The lighting power densities and lighting controls will be ascertained from the lighting installation designs.

Documentation

Credit(s) shall be achieved when the Applicant provides the documentation stated below, to demonstrate criteria compliance :

- 1) Energy simulation report clearly indicates the savings associated with HVAC&R and lighting systems;
- 2) All input and output files used for the energy simulation;
- 3) Specification describing HVAC&R and lighting systems;
- 4) drawing, As-built for all systems installed;
- 5) Manufacturer specification, catalogue, technical data used in the energy simulation;
- 6) Other calculations or supporting that are used as substantiation to the energy simulation;
- 7) All submissions shall be signed by a Registered Energy Assessor (REA)

EU1 Energy Performance - Performance-Based-Approach

Submission Template for EU 1

Credit Requirements:

Credit(s) shall based on the reduction of annual HVAC&R consumption by:

Credit(s)	1	2	3	4	5	6
HVAC&R	3%	5%	10%	15%	20%	25%

And from lighting by:

Credit(s)	1	2	3	4	5	6	7	8
HVAC&R	10%	15%	20%	25%	30%	35%	40%	45%

Credit Attainable:	14
Credit(s) anticipated for this submission:	

Type of Space:

- air-side air-conditioning system (over 80% of area served by central plant, the simulation shall cover the project space. The building envelop characteristics will be as described in Appendix 9.1 of the Manual.
- unitary air-conditioning system (the simulation will cover the entire air-conditioning installation. The building envelope characteristics shall be as described in Appendix 9.1 of the Manual.

Enclosure

- Narrative, with describing in detail HVAC&R and lighting systems installed;
- Simulation, with Software name, version listed;
- Exceptional Calculation Method, where used;
- Methodology, BEC 2012 Edition and Appendix 9.1 of the Manual
- Methodology, ASHRAE 90.1 - 2010, Appendix G or equivalent
- Energy Simulation report, clearly indication savings for HVAC&R and lighting systems;
- Energy Simulation report, with ALL input data, output file;
- Energy Simulation report, other documentation to substantiate simulation
- Manufacturer's catalogue, technical data sheets used in the energy simulation
- Drawing, engineering with "As-built" for all systems;
- Signature, by HKSAR Registered Energy Assessor.

EU1 Energy Performance - Performance-Based-Approach

Submission Template for EU 1

Credit Requirements: Up to a maximum of 14 credits for using energy efficient HVAC&R and lighting systems and controls that reduce energy consumption

Credit Attainable:	
Credit(s) anticipated for this submission:	14

Enclosure

- Narrative, describing the engineering installation features;
- Drawing, engineering with “As-built” BSI floor plans, schematics, with features indicated;
- EMSD Lighting Form (showing the percentage LPD reduction);
- Manufacturer’s catalogue, technical data sheet (for feature/ equipment installed)
- Records with all T&C records demonstrating the relevant systems, set points, criteria;
- Record Photographs with “as built” installations with features indicated;
- Signature by HKSAR Registered Energy Assessor (all documents)

HVAC&R Features

- 1 credit for appropriate zoning and thermostal distribution
- 1 credit for occupancy sensors and/ or programmable timer controlling HVAC operation;
- 1 credit for automatic blinds controlled by daylight sensor;
- 1 credit for ceiling, wall mounted circulation fans;
- 1 credit for fan coil units with variable speed drive, or high efficiency motors;
- 1 credit for high efficient air conditioning units;
- 1 credit for heat recovery system;
- 1 credit for CO2 sensors controlling fresh air rate;
- 1 credit for complying with the installation positions for air-conditioning units;
- 1 credit for HVACR system operating with free cooling under enthaipy control;
- 1 credit for openable windows for natural ventilation;

HVAC&R Features

- 1 credit for reducing LPD by 10%
- 2 credit for reducing LPD by 15%
- 3 credit for reducing LPD by 20%
- 4 credit for reducing LPD by 25%
- 5 credit for reducing LPD by 30%
- 6 credit for reducing LPD by 35%
- 1 credit for appropriate zoning and manual control;

- 1 credit for daylight dimming controls;
- 1 credit for occupancy sensor controls;
- 1 credit for task light for every workstation;
- 1 credit for entrance master switch;
- 1 credit for compliance with voluntary lighting code;

Use CIR to submit additional options for BSL consideration;

EU1 Energy Performance - Performance-Based-Approach

Submission Template for EU 1

Credit Requirements: 1 credit for 70% of all electrical appliances are certified energy efficient;
 2 credits for 90% of all electrical appliances are certified energy efficient;
 3 credits for 100% of electrical appliances are certified energy efficient;

Credit Attainable:	3
Credit(s) anticipated for this submission:	

Enclosure

- Summary table (refer to sample below);
- Catalogue manufacturer's technical data sheet for all appliances;
- Drawing, architectural layout plan(s) with locations highlighted
- Record Photographs with all appliances in situ;

Item		model number	dwg reference	catalogue reference	efficiency rating	efficiency label	photo reference	labelled qty	total qty
1									
2									
3									
4									
Sub total:									

Note: Equipment and appliances shall be new; installed by the Applicant at the time of occupancy, within project space. Only appliances under the EMSD's mandatory, recognition, voluntary scheme, and US EPA's ENERGY STAR shall qualify. Other labelled appliances, including but not limited to, HVAC&R related, lighting related including ballast, fixed task lighting, hot water appliances, and building envelope products, shall be excluded to prevent double counting.

EU1 Energy Performance - Performance-Based-Approach

Submission Template for EU 1

Credit Requirements: 2 credits for Commissioning planning detailing all specified commissioning work for HVAC&R, lighting and other BSI systems that impact on energy use and indoor environmental quality, and signed by iCxA.
2 credits for Commissioning records, drawings for HVAC&R, lighting and other BSI that impact on energy use and indoor environmental quality, and signed by iCxA.

Credit Attainable:	4
Credit(s) anticipated for this submission:	

Enclosure

iCxA

- ICxA Information, Resume, Scope of work, Verify independent;

Commissioning planning

- Commissioning plans for all BSI, functional templates, programme, signed by iCxA;
 Commissioning specifications all systems, signed by iCxA;

Commissioning records

- Records, commissioning reports, forms, measurement schedules, methods for all systems signed by iCxA
 Records with scheduled/ deferred commissioning, all systems, signed by iCxA
 Drawings with "As built" for all systems reviewed by iCxA will ALL commissioning data highlighted;
 Record Photographs, sample commissioning procedures, records, measuring;

Alternative - No BSI Alteration

- Contract/ Lease, stating no BSI, and no supplementary BSI installed, signed by director of building owner;

iCxA - independent Commissioning Authority
BSI - Building Services Installation

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Submission Template for EU 1

Credit Requirements: 1 credit for digital/ online O&M manual for all engineering systems including energy management section, or extra separate energy management manual;

Credit Attainable:	1
Credit(s) anticipated for this submission:	

Enclosure

- List Responsible Person
- Records with digital O&M manual, record photographs, screenshots, printout, populated lists, list set points
- Records with digital energy management manual or section indicated, table of contents;

Alternate - Host Building Contractor*

- Contract with BSI maintenance, scope of work
- Records with method statements for all systems, programme/ frequency of inspection for all systems;

BSI - Building Services Installation

*Contract(s) shall cover entire BSI (except FSI)