

4	ENERGY USE	4.1 ANNUAL ENERGY USE
		EU 1 REDUCTION OF CO₂ EMISSIONS
	EXCLUSIONS	None.
	OBJECTIVE	Reduce the consumption of non-renewable energy resources and the consequent harmful emissions of Carbon dioxide (CO ₂) to the atmosphere.
	CREDITS ATTAINABLE	15
	PREREQUISITES	Eu P1 Minimum Energy Performance.
	CREDIT REQUIREMENT	<p>(a) Commercial and Hotel Buildings, 1 to 15 credits for a reduction of CO₂ emissions or annual energy consumption by: 3%, 5%, 7%, 9%, 11%, 14%, 17%, 20%, 23%, 26%, 29%, 33%, 37%, 41% and 45% respectively.</p> <p>(b) Educational Buildings, 1 to 15 credits for reduction of CO₂ emissions or annual energy consumption by: 3%, 4%, 5%, 6%, 7%, 9%, 11%, 13%, 15%, 17%, 19%, 21%, 24%, 27% and 30% respectively.</p> <p>(c) Residential Buildings, 1 to 15 credits for reduction of CO₂ emissions or annual energy consumption by: 3%, 4%, 5%, 6%, 7%, 8%, 9%, 10%, 11%, 12%, 13%, 14%, 16%, 18% and 20% respectively.</p> <p>(d) Other Building Types, 1 to 15 credits for reduction of CO₂ emissions or annual energy consumption by: 1%, 2%, 3%, 4%, 5%, 6%, 7%, 8%, 9%, 10%, 12%, 14%, 16%, 18% and 20% respectively.</p>
	ASSESSMENT	<p>The number of credits to be awarded will be determined with reference to the percentage reduction of CO₂ emissions or annual energy consumption of the assessed building relative to the respective benchmark (zero-credit) criteria evaluated from the Baseline Building model.</p> <p>1 The calculation shall be done in terms of units of either CO₂ – kg or kWh per year. A simple conversion factor shall be adopted with reference to the Carbon Audit Guideline or default assumptions in Appendix 8.3. Full building energy simulation including energy used for heating, cooling, lighting, equipment, small power, etc shall be considered.</p> <p>2 The methodology of the energy simulation will make reference to the latest Building Energy Code (BEC) or Appendix G of ASHRAE 90.1-2007 or equivalent. (Note: As of interim measure before a Hong Kong equivalent of Appendix G of ASHRAE 90.1-2007 is available, lighting power density (LPD) in ASHRAE calculation shall use those parameters in Code of Practice for Energy Efficiency of Building Services Installation – 2012 Edition). Appendices 8.1 and 8.2 include the assumptions for design parameters for Performance-based approach for residential and other building types for reference.</p>

The energy analysis and supporting documentation shall be prepared and certified by a qualified professional person. The submission for compliance and the computer software to be used shall make reference to the latest Building Energy Code (BEC) or ASHRAE Standard 90.1-2007.

When the selected simulation program cannot adequately model a design (Note: For example: passive design with significant contribution to the reduction of CO₂ emissions), material, or device, the rating authority may approve an exceptional calculation method to demonstrate above-standard performance. The exceptional calculation shall make reference to Section A3.4 of Code of Practice for Energy Efficiency of Building Services Installation - 2012 Edition [1] and/or Appendix G2.5 of ASHRAE 90.1-2007[2] and/or Appendix D of the Advanced Energy Modelling for LEED – Technical Manual v1.0 (September 2011 Edition)[3].

- 1 EMSD - Code of Practice for Energy Efficiency of Building Services Installation - Section A3.4 2012
- 2 ASHRAE Standard 90.1-2007 – Energy Standard for Buildings Except Low Rise Residential Buildings
- 3 USGBC - Advanced Energy Modeling for LEED – Technical Manual v1.0 (August 2010 Edition).

4	ENERGY USE	4.1 ANNUAL ENERGY USE
		EU 2 PEAK ELECTRICITY DEMAND REDUCTION
	EXCLUSIONS	None.
	OBJECTIVE	Encourage energy conservation and methods to reduce peak electricity demand.
	CREDITS ATTAINABLE	3
	PREREQUISITES	None.
	CREDIT REQUIREMENT	<p>(a) Commercial and Hotel Buildings, 1 to 3 credits for a reduction in the peak electricity demand by 15%, 23% and 30% respectively.</p> <p>(b) Educational and Residential Buildings, 1 to 3 credits for a reduction in the peak electricity demand by 8%, 12% and 15% respectively.</p> <p>(c) Other Building Types, 1 to 3 credits for a reduction in the peak electricity demand by 8%, 12% and 15% respectively.</p>
	ASSESSMENT	<p>The number of credits to be awarded will be determined with reference to the percentage reduction of the monthly peak electricity demand for the month with the highest electricity demand throughout the year of the assessed building relative to the respective benchmark (zero-credit) criteria evaluated from the Baseline Building model.</p> <p>The assessment shall be included within the assessment of annual energy use for the project building.</p>



Circular Letter No.: 2016.135

Issue Date: 16 November 2016

Application: BEAM Plus NB Version 1.1 & 1.2
BEAM Plus EB Version 1.1 & 1.2

Effective Date: 11 December 2016

EU 1 Reduction of CO₂ Emission and EU 2 Peak Electricity Demand Reduction

This Circular Letter announces that for those projects commencing BEAM Plus Provisional Assessment (PA) on and after 11 December 2016, the Applicant shall follow the “Code of Practice for Energy Efficiency of Building Services Installation 2015” (BEC 2015 in short) in the baseline energy simulation model adopted under EU 1 and EU 2.

To compensate for the more stringent requirements of BEC 2015, a revised set of credit scores will be adopted for projects assessed under BEC 2015 as provided in the Annex of this Circular Letter.

5

A handwritten signature in blue ink, appearing to read "Kenneth Chan", is positioned above a horizontal line.

Sr. Kenneth CHAN Jor Kin
Chairperson of Technical Review Committee

EU 1

Credit	(a) Commercial and Hotel Buildings	(b) Education Buildings	(c) Residential Buildings	(d) Other Building Types
0	<1%	<1%	<2%	<1%
1	-	-	2%	-
2	-	-	3%	1%
3	1%	-	4%	2%
4	3%	1%	5%	3%
5	5%	2%	6%	4%
6	8%	4%	7%	5%
7	11%	6%	8%	6%
8	14%	8%	9%	7%
9	17%	10%	10%	8%
10	20%	12%	11%	9%
11	23%	14%	12%	11%
12	27%	16%	13%	13%
13	31%	19%	15%	15%
14	35%	22%	17%	17%
15	39%	25%	19%	19%

EU 2

Credit	(a) Commercial and Hotel Buildings	(b) Education Buildings and Residential Buildings	(c) Other Building Types
0	<11%	<2%	<7%
1	11%	2%	7%
2	19%	6%	11%
3	26%	9%	14%



Circular Letter No.: 2018.147 (Revision 2)

Issue Date: 14 May 2018

Revision Date: 3 May 2019

Application: BEAM Plus NB Version 1.1 & 1.2
BEAM Plus EB Version 1.1 & 1.2
BEAM Plus EB Version 2.0 Comprehensive Scheme and Selective Scheme
BEAM Plus BI Version 1.0

Effective Date: 3 May 2019

**Compliance of Building Energy Code & Energy Audit Code and
Baseline Criteria for Energy Simulation**

The Circular Letter clarifies the assessment requirement on the following pre-requisites and credits, which relates to the compliance of Building Energy Code (BEC) & Energy Audit Code (EAC) and the baseline standard for energy simulation:

- EU P1, EU 1 & EU 2 under BEAM Plus New Buildings v.1.1 & 1.2.
- EU P1, EU 1 & EU 2 under BEAM Plus Existing Buildings v.1.1 & 1.2.
- EU P1 & EU 2 under BEAM Plus v.2.0 Comprehensive Scheme and
EU 2 under BEAM plus v.2.0 Selective Scheme
- EU 1 under BEAM Plus Interiors v.1.0

1. **Technical Circular Letter No. 2016.132 dated 19 April 2016 and 2016.133 dated 13 May 2016 are hereby withdrawn.**
2. All submissions regarding the abovementioned pre-requisites and credits shall observe the requirements as indicated below:

BEAM Plus New Buildings v.1.1/1.2

3. The assessment criteria for EU P1 has been clarified as follows:
 - i. For ALL projects undergoing Provisional Assessment (PA), the Applicant shall provide (a) an undertaking letter endorsed by the developer¹ or the project's Registered Energy Assessor (REA) or (b) duly completed Form EE-1 endorsed by developer or project's REA or (c) approval records of Stage One Declaration issued by Electrical and Mechanical Services Department (EMSD) declaring the BEC Edition that the building service installations in the development intends to follow².

¹ Developer means the owner of the land on which the building is built or will be built, in relation to a building or a proposed building. It shall have the same definition as the "Name of Owner / Developer" on the Project Information Fact Sheet.

² The wording of this paragraph has been updated on 3 May 2019.

- ii. For new building projects undergoing Final Assessment (FA), the Applicant shall provide approval records on Certificate of Compliance Registration (COCR) issued by EMSD confirming the BEC Edition that the development has complied. If the project falls under Section 4 of the Building Energy Efficiency Ordinance (e.g. buildings not subject to the application of Building Energy Efficiency Ordinance), the Applicant shall then provide a finalized energy analysis report or relevant Technical Forms (i.e. Form EE-SU, EE-LG, EE-EL, EE-AC, EE-LE, EE-PB, etc.) checked and certified by the project's Registered Energy Assessor (REA) to confirm that the building complies with the same BEC edition as approved in PA.
 - iii. For Major Retrofitting Works (MRW) undergoing FA, the Applicant shall provide the Form of Compliance (FOC) accompanied by the relevant Technical Forms (e.g. Form EE-SU, EE-LG, EE-EL, EE-AC, EE-LE, EE-PB, etc.) to confirm on the building service installations' compliance with the prescribed BEC edition. All data within the FOC and its relevant Technical Forms shall be checked and be certified by the REA. Evidences to demonstrate that the FOC and the relevant Technical Forms have been submitted to EMSD for records shall also be provided to demonstrate the compliance of the credit.
4. The methodology of the energy simulation for EU 1 & EU 2 has been clarified as follows:
- i. BEC as baseline standard: If the Applicant intends to adopt BEC as the baseline standard for energy simulation, the Applicant shall follow the same BEC edition as declared/confirmed under pre-requisite EU P1.
 - ii. ANSI/ASHRAE/IES 90.1 (ASHRAE Standard 90.1) as baseline standard: If the Applicant intends to adopt ASHRAE Standard 90.1 as the baseline standard for energy simulation, the Applicant shall follow the latest edition of ASHRAE Standard 90.1 coming into effect at the time of first assessment submission³, **except for lighting**. For lighting, the Applicant should adopt latest edition of BEC coming into effect at the first assessment submission. Subsequent assessments⁴ shall follow the same edition of ASHRAE Standard as approved in PA.
 - iii. Approved PA projects: For projects that have already completed PA and with specific baseline standards approved, the Applicant can continue to adopt the same baseline standard in preparing the energy simulation for subsequent assessments. For the avoidance of doubt, the Applicant shall provide relevant justifications (e.g. extract of the PA report, extract of energy simulation report submitted during PA, etc). during subsequent assessments to demonstrate that the energy simulation submitted for FA is utilizing the same baseline standards as in PA.

BEAM Plus Existing Buildings v.1.1/1.2

- 5. The credit name for EU P1 has been renamed as Energy Audit.
- 6. Technical Review Committee will accept energy audit report conducted in accordance with the EAC as an alternative in complying with the assessment requirement under EU P1. If the Applicant intends to adopt this method for assessment, the Applicant shall observe the following requirement:

³ First assessment submission refers to the date when the initial assessment is formally accepted by BSL. 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.

⁴ Subsequent assessments refer to the assessment conducted after the completion of the PA (e.g. PA re-assessment, FA, etc).



Circular Letter No.: 2019.159 (Revision 1)

Issue Date: 26 June 2019

Revision Date: 11 September 2019

Application: BEAM Plus NB Version 1.1 & 1.2
BEAM Plus EB Version 1.1 & 1.2
BEAM Plus BI Version 1.0

Effective Date: 11 September 2019

**Comprehensive Review on Performance-Based Energy Benchmarking (2019) for
EU 1 & 2 Under BEAM Plus New Buildings Version 1.1 & 1.2,
BEAM Plus Existing Buildings Version 1.1 & 1.2 and BEAM Plus Interiors Version 1.0**

1. Electrical and Mechanical Services Department (EMSD) gazetted the 2018 Edition of the Code of Practice for Energy Efficiency of Building Services Installation (BEC 2018) on 16 November 2018, with the code taking effect on 16 May 2019¹. The tightened and new requirements on the four prescribed building services installation as stipulated in BEC 2018 edition are formulated to meet the latest technology advancement and the development of international standards².
2. BEAM Society has always taken a proactive approach in reviewing the latest statutory requirement and the industry trend to ensure that the benchmarking criteria of our tools on energy consumption is appropriate for the industry while meeting Government's policy objective on further enhancing the energy efficiency of buildings to help combat climate change.
3. Having reviewed all relevant factors affecting the benchmarking criteria of our tool on energy consumption, this Circular Letter announces an update to the benchmarking criteria for the following projects that shall adopt BEC 2018 in the baseline energy simulation/calculation:
 - i. **BEAM Plus New Buildings v1.1/1.2**
 - Projects that are required to comply with BEC 2018 in a Stage One Declaration signed by the developer on or after 16 May 2019;
 - Projects that are required to comply with BEC 2018 in a Form of Compliance signed by the developer on or after 16 August 2019;
 - Projects that falls under Section 4 of the Building Energy Efficiency Ordinance and are submitting for the first BEAM Plus assessment on or after 16 November 2019.

¹ Government Press Releases on New edition of Code of Practice for Energy Efficiency of Building Services Installation and Code of Practice for Building Energy Audit gazetted,
<https://www.info.gov.hk/gia/general/201811/16/P2018111600270.htm>

² The Building Energy Efficiency Ordinance (Cap 610) Technical Circular No. 1/2018 Launch of the BEC and EAC 2018,
https://www.emsd.gov.hk/bceo/en/pee/BEE0%20Technical%20Circular%20No.%201_2018.pdf

- ii. BEAM Plus Existing Buildings v1.1/1.2
BEAM Plus Interiors v1.0
 - Projects that are submitting for the first BEAM Plus assessment on or after 16 August 2019.
- 4. **Annex A** provides the updated benchmarking criteria for EU 1 & 2 under BEAM Plus New Buildings v.1.1 & 1.2 and BEAM Plus Existing Buildings v.1.1 & 1.2. **Annex B** provides the updated benchmarking criteria for EU 1 under BEAM Plus Interiors v.1.0.
- 5. Approved PA Projects: For projects that fall under paragraph (3) but have already completed PA with certain energy benchmarking criteria being approved, the Applicant may either continue to adopt the same energy benchmarking criteria for FA or voluntarily comply with this Technical Circular. For the avoidance of doubt, the Applicant shall provide PA evidences (e.g. extract of the PA report, documents submitted for assessment in PA, etc) in subsequent assessments to support the intention of using the same energy benchmarking as in PA.



Mr KM So
Chairperson of Standards Sub-committee

Annex A –
Updated benchmarking criteria for EU 1 & 2
under BEAM Plus New Buildings v.1.1 & 1.2 and BEAM Plus Existing Buildings v.1.1 & 1.2

EU 1 - Reduction of CO₂ Emissions

Credit	(a) Commercial and Hotel Buildings	(b) Educational Buildings	(c) Residential Buildings	(d) Other Building Types
0	<1%	<1%	<2%	<1%
1	-	-	2%	-
2	-	-	3%	1%
3	1%	-	4%	2%
4	3%	1%	5%	3%
5	5%	2%	6%	4%
6	7%	4%	7%	5%
7	9%	6%	8%	6%
8	11%	8%	9%	7%
9	13%	10%	10%	8%
10	16%	12%	11%	9%
11	19%	14%	13%	11%
12	22%	16%	14%	13%
13	25%	19%	16%	15%
14	28%	22%	18%	17%
15	32%	25%	20%	19%

EU 2 – Peak Electricity Demand Reduction

Credit	(a) Commercial and Hotel Buildings	(b) Educational and Residential Buildings	(c) Other Building Types
0	<10%	<5%	<7%
1	10%	5%	7%
2	19%	9%	11%
3	26%	12%	14%

Annex B –
Updated benchmarking criteria for EU 1
under BEAM Plus Interiors v.1.0

EU 1 – Energy Performance

Credit	HVAC&R	Lighting - Performance-Based Approach	Lighting - Prescriptive-Based Approach
0	<1%	<8%	<8%
1	1%	8%	8%
2	5%	13%	13%
3	9%	18%	18%
4	13%	23%	23%
5	17%	28%	28%
6	20%	33%	33%
7	-	38%	-
8	-	43%	-

BEAM Plus Assessment Tools

BEAM Plus New Buildings & Existing Buildings

Registered Projects

[FAQ](#)

- [FAQ - General](#)
- [FAQ - NB v1.1 and 1.2](#)
- [FAQ - NB v2.0](#)
- [FAQ - EB v1.1 and 1.2](#)
- [FAQ - EB v2.0](#)

[e-Form](#)

[BEAM Plus Interiors](#)

[BEAM Plus Neighbourhood](#)

[BEAM Plus Data Centres & Green Data Centres Practice Guide](#)

[BEAM Plus Bespoke](#)

[BEAM 4/04 & 5/04 Assessment Tool](#)

[Technical Circular Letter](#)

[iBEAM](#)

[Certified Building](#)

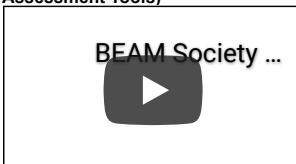
[Statistics](#)

[Assessment Process](#)

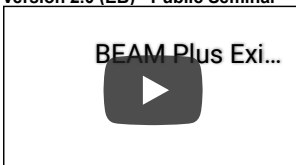
[Fees](#)

[Case Studies](#)

BEAM Society Limited (BEAM Plus Assessment Tools)



BEAM Plus Existing Building Version 2.0 (EB) - Public Seminar



[BEAM Plus New Buildings & Existing Buildings](#) > [FAQ](#) > [NB v1.1 and 1.2](#)

FAQ - NB v1.1 and 1.2

Site Aspects

[SA 2 Local Transport](#)

[SA 3 Neighbourhood Amenities](#)

[SA 4 Site Design Appraisal](#)

[SA 6 Cultural Heritage](#)

[SA 7 Landscaping and Planters](#)

[SA 8 Microclimate around Buildings](#)

[SA 9 Neighbourhood Daylight Access](#)

[SA 10 Environmental Management Plan](#)

[SA 11 Air Pollution during Construction](#)

[SA 12 Noise during Construction](#)

[SA 13 Water Pollution during Construction](#)

[SA 14 Noise from Building Equipment](#)

[SA 15 Light Pollution](#)

Materials Aspects

[MA P1 Timber Used for Temporary Works](#)

[MA P3 Construction and Demolition Waste Management Plan](#)

[MA P4 Waste Recycling Facilities](#)

[MA 4 Adaptability and Deconstruction](#)

[MA 6 Sustainable Forest Products](#)

[MA 10 Demolition Waste Reduction](#)

[MA 11 Construction Waste Reduction](#)

Energy Use

[EU 1 Reduction of CO2 Emissions](#)

#50. EU 1, What type of Baseline Model setting for office building should be used in energy simulation?

Referring to the BEAM Plus templates, it is stated that the use of the simulation method of either Performance-based Building Energy Code or ASHRAE Standard 90.1-2007 for commercial building is acceptable to BEAM Plus. The selection to use which simulation method is opened for the BEAM Pro to choose.

#51. EU 1, Will passive energy saving strategies contribute to the CO2 emission reduction calculation?

The passive energy saving strategies can contribute to the CO2 emission reduction calculation. Initiatives such as natural ventilation and natural daylight would also be counted in EU1.

#52. EU 1, What kind of software is acceptable for BEAM Plus Energy modeling?

In principle, BEAM Plus Assessment would accept the use of most of the building energy analysis simulation software listed in the Appendix II of the EMSD Performance-based Building Energy Code 2007 Edition for the energy simulation required in BEAM Plus. However, the Technical Review Committee might review the acceptance of any other software that are not in the list (Appendix II) but embrace those simulation general requirements as highlighted in Appendix G2 of the Appendix G Performance Rating Method of ASHRAE Standard 90.1-2007. The applicant will have to submit verification report of the software to prove their suitability for the purposes.

#53. EU 1, For BEAM Plus New Buildings / Existing Buildings Version 1.1 and 1.2, Do I need to include Fan energy in the energy analysis calculation?

Ventilation fan energy for bathrooms and kitchen in residential units and club house, plant rooms, RS&MRR/RS&MRC and car park including the jet fans should all be included in the calculation where applicable. Input power of motor should be used instead of absorbed power of fan.

(Released on 9 March 2015)

#54. EU 1, For BEAM Plus New Buildings / Existing Buildings Version 1.1 and 1.2, what building type should Club House be classified under ?

Club House should be classified under "Commercial and Hotel Buildings" types.

(Released on 4 January 2016)

#55. EU 1 and EU 2, For BEAM Plus New Buildings Version 1.1 and 1.2, what is the definition of "process load" and whether it could be excluded from the energy simulation?

- a. Process load is defined as "the load on a building resulting from the consumption or release of energy consumed in support of a manufacturing, industrial, or commercial process other than conditioning spaces and maintaining comfort and amenities for the occupants of a building".
- b. Process load could be excluded from the energy simulation.

(Released on 3 May 2019)

#56. EU 1 and EU 2, For BEAM Plus New Buildings Version 1.1 and 1.2, what are some of the examples which could be classified as "process load"?

"Process load" typically includes the load on a building resulting from the consumption or release of energy consumed in support of industrial laundry washing and drying, commercial cooking devices, industrial waste water treatment, and other manufacturing, industrial, or commercial process.

(Released on 3 May 2019)

#57. EU 1 and EU 2, for Plus New Buildings Version 1.1 and 1.2, should project proponents apply a degrading factor on the Coefficient of Performance (COP) of heating, ventilation and air conditioning (HVAC) installations to cater for the following condition:

- i) excessive refrigerant pipe run (e.g. refrigerant pipe with a length of 20m or greater);
- ii) difference in rating temperature between the standard rating condition stipulated in Building Energy Code (BEC) and the manufacturer's data; and
- iii) difference in temperature between standard rating condition in manufacturer's data and actual design condition.

- a. Degrading factor on the COP of HVAC installations shall NOT be applied to condition (i).
- b. Degrading factor on the COP of HVAC installations shall be APPLIED to condition (ii).
- c. Degrading factor on the COP of HVAC installations shall NOT be applied to condition (iii).

(Released on 12 July 2019)

EU 2 Peak Electricity Demand Reduction

EU 3 Embodied Energy in Building Structural Elements

EU 7 Air-conditioning Units

EU 9 Energy Efficient Appliances

EU 10 Testing and Commissioning

EU 12 Metering and Monitoring

Water Use

WU P1 Water Quality Survey

WU P2 Minimum Water Saving Performance

WU 1 Annual Water Use

WU 5 Water Efficient Appliances

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11