

**Energy Efficiency of Buildings
Building (Energy Efficiency) Regulation****Introduction**

The Building (Energy Efficiency) Regulation (B(EE)R), which came into effect on 21 July 1995, imposes energy efficiency requirements for buildings. It aims at reducing heat transfer through the building envelope thus saving the electricity consumption for air-conditioning by requiring the external walls and roofs of a commercial or hotel building to be designed and constructed to have a suitable Overall Thermal Transfer Value (OTTV). The suitable level of OTTV and the methodology of OTTV calculations are specified in the Code of Practice for Overall Thermal Transfer Value in Buildings 1995 (the OTTV Code) published by the Buildings Department (BD). The OTTV requirements apply to building works in accordance with section 39 of the Buildings Ordinance.

Review of OTTV Control

2. The first review of the OTTV control and the corresponding amendments to the OTTV Code were promulgated in the previous revision of this Practice Note in June 2000. Recently, the BD has completed the second review of the OTTV control and concluded that the suitable level of OTTV specified in the OTTV Code should be further tightened while open-front shops or the like complying with the specified criteria may be exempted from the OTTV requirements upon application.

3. Accordingly, the OTTV Code is amended as follows:

- (a) in the case of a building tower, the OTTV should not exceed 24 W/m^2 (30 W/m^2 before this amendment);
- (b) in the case of a podium, the OTTV should not exceed 56 W/m^2 (70 W/m^2 before this amendment); and
- (c) open-front shops or the like on G/F may be disregarded from the OTTV calculation, if the usable floor space of the shop is not more than 50m^2 and any air-conditioning system to be installed for the shop should be separated from the air-conditioning system of the main building.

4. The above amendments to the OTTV Code shall apply to all new building projects for which new building plans or major revision of building plans are submitted for approval on or after 1 April 2011.

5. The associated administrative arrangements remain unchanged. Details of such arrangements are given below.

Procedure

6. It is possible that the design of the facade of a building may not have been finalised when building plans are first submitted. Accordingly, the Building Authority (BA) would accept that the first submission of building plans needs not be accompanied by the information and calculations as required by Regulation 5 of the B(EE)R. However, after the approval of building plans and prior to the application for consent to commence building works, submission of detailed OTTV calculations and information on the standard forms (Form OTTV 1 to 4) set out in the schedule to the OTTV Code is required under Regulation 10 of the Building (Administration) Regulations.

7. At the time of building plan submission or upon application for occupation permit as the case may be, the OTTVs of the external walls and roofs of the building and the shading coefficient of glass should be indicated on the building plans or record plans as relevant.

8. Upon application for occupation permit, the following OTTV documents together with the record plans are required to be submitted :

- (a) the finalised version of the OTTV report, including OTTV calculations;
- (b) test certificates or other published specifications for the building materials used, such as glass used for fenestration and facade; and
- (c) the OTTV Summary Sheet on a standard form in **Appendix A**.

Acceptance of Building Materials

9. If building materials other than those listed in the OTTV Code are used, their OTTV or equivalent should be obtained from reliable sources. It would facilitate processing of building plans if full background to the source of information and suitability for local conditions is detailed in the submission.

Sunshading and Innovative Designs

10. Genuine sunshades used to assist in the reduction of the OTTV are not accountable for gross floor area and, by virtue of Regulation 6 of the B(EE)R, shall not be included in site coverage calculations or be regarded as obstructions to prescribed windows, if they project 1.5m or less from the external walls. In determining whether the sunshades will assist in the reduction of the OTTV, quantitative assessment should be submitted to the BA for consideration, if the sunshades project over 0.5m from the external walls. Sunshades will not normally be allowed to project over streets under section 31(1) of the Buildings Ordinance, but exemptions may be considered in individual cases if special circumstances so justify.

11. The BA can accept designs other than those stipulated in the OTTV Code provided that these designs are comparable or better in terms of energy efficiency. Innovative designs which aim at reducing OTTV would not be penalised in terms of plot ratio and site coverage if they could be demonstrated to be effective.

12. Authorized persons are encouraged to consult a Registered Professional Engineer in building services or mechanical discipline in assessing the design assumptions adopted in the evaluation of energy efficiency in buildings, particularly for innovative designs other than the method stipulated in the OTTV Code. A comprehensive approach to energy conservation produces better results. The services of a Registered Professional Engineer in these disciplines will contribute to this.



(AU Choi-kai)
Building Authority

Ref. : BD GP/LEG/22
BD GR/1-55/97/2

This PNAP is previously known as PNAP 172

First issue May 1995

Last revision January 2011

This revision August 2011 (AD/NB1) – paras. 2 and 3 amended

OTTV Summary Sheet

Address :				BD Ref. No.	
Building Type		<input type="checkbox"/> 1. Hotel			
		<input type="checkbox"/> 2. Office (including industrial/office)			
		<input type="checkbox"/> 3. Shops			
		<input type="checkbox"/> 4. Others*, please specify :			
OTTV calculated by		<input type="checkbox"/> 1. Registered Professional Engineers (Building Services/Mechanical)			
		<input type="checkbox"/> 2. Architect			
		<input type="checkbox"/> 3. Others, please specify :			
Classification		Podium		Tower	
Designated Use		<input type="checkbox"/> 1. Shops		<input type="checkbox"/> 4. Cinema	
		<input type="checkbox"/> 2. Offices		<input type="checkbox"/> 5. Plant Rooms	
		<input type="checkbox"/> 3. Restaurants		<input type="checkbox"/> 6. Others	
No. of Storeys (excluding ground floor)					
Gross Floor Area		m ²		m ²	
Usable Floor Area		m ²		m ²	
Total External Wall Area (including windows)		m ²	window to wall ratio	m ²	window to wall ratio
Total Window Area		m ²	= :	m ²	= :
Total Skylight Area		m ²		m ²	
*Weighted Average U-value (W/m ² K)	Opaque Wall	W/m ² K		W/m ² K	
	Window	W/m ² K		W/m ² K	
	Opaque Roof	W/m ² K		W/m ² K	
	Skylight	W/m ² K		W/m ² K	
Window	Glass Type	<input type="checkbox"/> Reflective, Area = m ² , SC = VLT =		<input type="checkbox"/> Reflective, Area = m ² , SC = VLT =	
		<input type="checkbox"/> Tinted, Area = m ² , SC = VLT =		<input type="checkbox"/> Tinted, Area = m ² , SC = VLT =	
		<input type="checkbox"/> Clear, Area = m ² , SC = VLT =		<input type="checkbox"/> Clear, Area = m ² , SC = VLT =	
	Double Glazing	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
	External Shading	Overhang <input type="checkbox"/> Yes <input type="checkbox"/> No		Overhang <input type="checkbox"/> Yes <input type="checkbox"/> No	
		Sidefin <input type="checkbox"/> Yes <input type="checkbox"/> No		Sidefin <input type="checkbox"/> Yes <input type="checkbox"/> No	
Skylight	Glass Type	<input type="checkbox"/> Reflective, Area = m ² , SC = VLT =		<input type="checkbox"/> Reflective, Area = m ² , SC = VLT =	
		<input type="checkbox"/> Tinted, Area = m ² , SC = VLT =		<input type="checkbox"/> Tinted, Area = m ² , SC = VLT =	
		<input type="checkbox"/> Clear, Area = m ² , SC = VLT =		<input type="checkbox"/> Clear, Area = m ² , SC = VLT =	
	Doubling Glazing	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
	External Shading	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
**Weighted Average Absorptivity	Wall				
	Roof				
**Weighted Average Density	Wall	kg/m ²		kg/m ²	
	Roof	kg/m ²		kg/m ²	
OTTV	Wall	W/m ²		W/m ²	
	Roof	W/m ²		W/m ²	
	Overall average	W/m ²		W/m ²	
Additional information/views on energy efficiency control :					

SC = Shading Coefficient

VLT = Visible Light Transmittance

*Other commercial buildings may include : department stores, places of public entertainment, places of public assembly, restaurants etc.

**Weighted by area

Note :

1. Please tick in the box as appropriate
2. Window and skylight data should represent the major proportion of its use in the development.