

# EA Report – Energy Audit Checklist (Technical form EE-EA(V.1))

Part 1- General Information				Page ___ of ___
Name of Building	English		中文	
Address of Building	Street No.	Street		
	District		<input type="checkbox"/> HK	<input type="checkbox"/> Kowloon
Owner of Building				Mr. / Miss / Ms. #
	Name in English #		中文名	Title
	Room/Flat	Floor	Block	Building
	Street No.	Street		
	Correspondence Address of Owner			
	Tel No.		E-mail Address	Fax No.
Representative of Owner of Building				Mr. / Miss / Ms. #
	Name in English #		中文名	Title
	Room/Flat	Floor	Block	Building
	Street No.	Street		
	Correspondence Address of Representative (can be a company, an organization or a person)			
	Tel No.		E-mail Address	Fax No.
	(If the Representative is a company or organization, please indicate below the Representative's contact person)			
	Position in company/organization	Name in English (contact person) #	中文名(聯絡人)	Mr. / Miss / Ms. # Title

# EA Report - Executive Summary form (Technical form EE-EAes(V.1))

Part 1 – Administrative Information & Building Characteristics			
(A) Administrative Information			(EAC Clause 8.1)
Name of Building <sup>^1</sup>			
Address of Building			
1) Date of commencement of energy audit :	(dd/mm/yyyy)		
2) Date of completion of energy audit : (not later than 6 months after the energy bill reference month)	(dd/mm/yyyy)		
3) Energy Audit Form validity period - issued on :	(dd/mm/yyyy)	and expired on :	(dd/mm/yyyy)
4) Energy Audit Report reference no. (optional) :			
5) Does the audited building import or export energy from/to other building ?	Building(s) importing energy or to which energy is exported		Import or export
<input type="checkbox"/> Yes <input type="checkbox"/> No	Name(s) of building(s)	Address(es) of building(s)	
If yes, please provide information on right. (Refer TG-EAC clause 4.4)			

## (B) Building Characteristics

(EAC Clause 8.1)

### (I) Building Type, Usage & Operation

(Please tick where applicable and insert N/A for non-applicable items.)

#### 1) Type of building

(a) Please choose the type (tick one item only) of building of the building entity<sup>^2</sup> audited :

- Commercial building       Commercial portion of composite (commercial & residential) building       Commercial portion of composite (commercial & industrial)<sup>^3</sup> building

(b) Please indicate the portion of the building entity being common area<sup>^4</sup> :  %

(c) Please indicate the no. of blocks<sup>^2</sup> of the building entity :  no. of blocks

2) Total internal floor area<sup>^5</sup> of the building entity (m<sup>2</sup>) :

3) No. of floors<sup>^6</sup> of the building entity :

4) Major type of building façade (tick one item) :       Curtain wall       Non-curtain wall

5) Date(s) of issue of occupation approval (dd/mm/yyyy) :

6) Type of central air-conditioning<sup>^8</sup> provided :       Cool air       Chilled water       Condenser water only       Not provided

#### 7) Summary of operation characteristics of categorized major usages of CBSI-served areas :

Operation characteristics	%tage area of total of building entity <sup>^9</sup>	%tage AC area of total of building entity <sup>^10</sup>	Average weekly operating hours (hrs/week) <sup>^11^12</sup>	Daily average no. of occupants <sup>^12</sup>
Major usage				
(a) Office				
(b) Shopping & leisure				
(c) Back of house area				
(d) Restaurant				
(e) Car park				N/A
(f) Others <sup>^13</sup>				
Total <sup>^14</sup>			N/A	

Daily average occupant density (m<sup>2</sup> per person)<sup>^15</sup>

**8) Details of operation characteristics of CBSI-served areas grouped under categorized major usages <sup>^16</sup>**

(energy consumption on account of the building owner) :

CBSI served Categorized major usages		Operation Characteristics		Norm <sup>^17</sup> of operation	%tage area of total of building entity	Weekly operating hours <sup>^12</sup> (hrs/week) [sum up hours of "weekday" and hours of "weekend" to obtain hours of "week total"]		
		General or 24-hour	AC or non-AC			weekday	weekend	week total
(a)	(i) Commonly used areas <sup>^18</sup> on office floors (office tower entrance lobby, lift lobbies, common corridors, common toilets etc.)	General	AC					
			Non-AC					
	24-hour	AC						
		Non-AC						
(a)	(ii) Areas specific for office works (general office, private office, meeting rooms, data centres, server rooms, clinics, laboratories, tutorial schools, private toilets etc.)	General	AC					
			Non-AC					
	24-hour	AC						
		Non-AC						
(b)	(i) Commonly used areas <sup>^18</sup> on shopping & leisure floors (shopping mall entrance lobby, public circulation areas, atrium, visitor toilets, etc.)	General	AC					
			Non-AC					
	24-hour	AC						
		Non-AC						
(b)	(ii) Areas specific for shopping & leisure (retail shops, department stores, cinemas, health clubs, private toilets etc.)	General	AC					
			Non-AC					
	24-hour	AC						
		Non-AC						
(c)	Back of house areas (plant rooms, cleaner rooms, staircases (outside public circulation areas))	General	AC					
			Non-AC					
	24-hour	AC						
		Non-AC						
(d)	Restaurants	General	AC					
			Non-AC					
	24-hour	AC						
		Non-AC						
(e)	Car parks	General	AC					
			Non-AC					
	24-hour	AC						
		Non-AC						
(f)	Others <sup>^13</sup> (if applicable, please specify)	General	AC					
			Non-AC					
	24-hour	AC						
		Non-AC						

## (II) Central Building Services Installation <sup>^19</sup>

### 1) Air-conditioning Installation

#### (a)(i) Chillers, Heat Pumps, Boilers, Other Heating <sup>^20</sup>

Type of equipment (C/HP/B/O) <sup>^21</sup> (C: Chiller, HP: Heat Pump, B: Boiler, O: Other heating)	Cooling (for heat rejection) (A/FW/SW/FE) <sup>^22</sup>	Compressor (Ce/Se/So/Re) <sup>^23</sup>	Refrigerant (R134a/ R123/R407c/R410a/ R12/R11 etc.) <sup>^24</sup>	Rated Capacity (kW)	Rated input power (kW)	Quantity	COP (kW / kW) <sup>^25</sup>
<b>Each row to cater for a COLLECTIVE GROUP of equipment</b>							
Total for cooling <sup>^26</sup> , of all chillers / heat pumps							
Total for heating <sup>^26</sup> , of all boilers / heat pumps / other heating							

#### (a)(ii) Unitary air-conditioners <sup>^20</sup>

Type of equipment (R/S/P) <sup>^21</sup> (R: Room type, S: Split type, P: Packaged type)	Cooling (for heat rejection) (A/FW/SW/FE) <sup>^22</sup>	Compressor (Se/So/Re) <sup>^23</sup>	VRF ? <sup>^23</sup>	Refrigerant (R410a, R22 etc.) <sup>^24</sup>	Rated Capacity (kW)	Rated input power (kW)	Quantity	COP (kW / kW) <sup>^25</sup>
Total for cooling <sup>^26</sup> , of all unitary air-conditioners								
Total for heating <sup>^26</sup> , of all unitary air-conditioners								
<b>Percentage</b> (based on total cooling capacity) of all unitary air-conditioners (add up to 100%) :		for office floors		for shopping & leisure floors		for other floors		

# 1) Air-conditioning Installation (continued)

(b) Air-conditioning pumps		Pump rated motor power (kW)	Pump rated flow (L/s)	Quantity	Performance (W per L/s)
(i) Chilled water pumps	Primary circuit, sub-total of all pumps <sup>^27</sup>				
	Secondary circuit, sub-total of all pumps <sup>^27</sup>				
	<b>Total, of all chilled water pumps<sup>^27A</sup></b>				
(ii) Condenser water pumps	Fresh water, sub-total of all pumps <sup>^27</sup>				
	Sea water, sub-total of all pumps <sup>^27</sup>				
	<b>Total, of all condenser water pumps<sup>^27B</sup></b>				
(iii) Heated water pumps – total of all heated water pumps <sup>^27</sup>					
(c) Heat rejection		Fan rated motor power (kW) <sup>^27C</sup>	Rated heat rejection capacity (kW) <sup>^27C</sup>	Quantity	Performance (kW / kW) <sup>^27C</sup>
Sub-total, of all cooling towers <sup>^27C</sup>					
Sub-total, of all radiators <sup>^27C</sup>					
<b>Total, of all heat rejection equipment<sup>^27C</sup></b>					
(d) Air-conditioning fans		Fan rated motor power (kW)	Fan rated flow (L/s)	Quantity	Performance (W per L/s)
Sub-total, of all AHUs & FCUs (excluding primary air AHU) <sup>^27</sup>					
Sub-total, of all primary air AHUs, fresh air and return air fans (for conditioned areas) <sup>^27</sup>					
<b>Total, of all air-conditioning fans<sup>^27D</sup></b>					
Percentage (based on total fan rated motor power) of all air-conditioning fans (add up to 100%) :		for office floors	for shopping & leisure floors	for other floors	
(e) Chilled / Heated water plant sequencing control		<input type="checkbox"/> Yes <input type="checkbox"/> No			
(f) Overall representative indoor room temperature set point in summer (°C) :					
(g) Major type of air-side system (CBSI) : (may tick more than one item, if it serves 20% or more of AC area of building entity)					
		<input type="checkbox"/> Chilled water AHU (VAV/CAV) <input type="checkbox"/> Chilled water FCU <input type="checkbox"/> Unitary air-conditioner <input type="checkbox"/> Not applicable			
(h) Power supply to air-side system AHU/FCU fans is mainly on account of :		<input type="checkbox"/> building owner <input type="checkbox"/> tenants <input type="checkbox"/> Not applicable			

## 2) Central Mechanical Ventilation

	Fan rated motor power (kW)	Fan rated flow (L/s)	Quantity	Performance (W per L/s)
Sub-total, of all exhaust and intake fans for car park <sup>^27</sup>				
Sub-total, of all exhaust and intake fans for toilets, pantries, un-conditioned areas etc. <sup>^27</sup>				
<b>Total, of all central mechanical ventilation fans<sup>^27B</sup></b>				
Total internal floor area of areas served by central mechanical ventilation (m <sup>2</sup> ) :				
<b>Percentage</b> (based on total rated motor power) of all central mechanical ventilation fans (add up to 100%) :				
	for office floors	for shopping & leisure floors	for other floors	

## 3) Lighting Installation (Lighting power based on rated luminaire wattage, and include decoration lighting but not external lighting)

(a) Sub-total lighting power, of all luminaires with <b>T5 fluorescent lamps</b> (kW)			
(b) Sub-total lighting power, of all luminaires with <b>fluorescent lamps other than T5</b> (kW)			
(c) Sub-total lighting power, of all luminaires with <b>compact fluorescent lamps</b> (kW)			
(d) Sub-total lighting power, of all luminaires with <b>incandescent lamps</b> (tungsten filament, tungsten halogen etc.) (kW)			
(e) Sub-total lighting power, of all luminaires with <b>discharge lamps</b> (metal halide, high pressure sodium vapour etc.) (kW)			
(f) Sub-total lighting power, of all luminaires with <b>LED (light emitting diode) lamps</b> (kW)			
(g) Sub-total lighting power, of all luminaires with <b>other types of lamps</b> , if any (kW)			
<b>Total lighting power</b> , of all luminaires (kW) [obtained by summing up all figures in (a) to (g)] :			
<b>Total internal floor area of areas having CBSI lighting installation</b> (m <sup>2</sup> ) :			
<b>Total lighting power density</b> (kW/m <sup>2</sup> ) [obtained by dividing total lighting power by total internal floor area (having CBSI lighting) above] :			
<b>Percentage</b> (based on total lighting power) of all luminaires (add up to 100%)			
	for office floors	for shopping & leisure floors	for other floors

#### 4) Lift and Escalator Installation

	Rated motor power (kW)	Quantity
Sub-total, of all traction lifts with DC Ward Leonard drive		
Sub-total, of all traction lifts with DC thyristor Leonard drive		
Sub-total, of all traction lifts with AC variable voltage (VV) drive		
Sub-total, of all traction lifts with AC variable frequency (VF) drive		
Sub-total, of all traction lifts with AC VVVF drive		
Sub-total, of all traction lifts with other types of drive		
Sub-total, of all hydraulic lifts		
Sub-total, of all escalators and passenger conveyors		
<b>Total, of all lifts, escalators and passenger conveyors</b>		
Percentage (based on total rated motor power) of all lifts, escalators & passenger conveyors (add up to 100%) :	for office floors	for shopping & leisure floors
		for other floors

#### 5) Other Installations<sup>^28</sup> (please provide information on an additional sheet if the rows provided are insufficient)

Total quantity of personal computers and photocopiers, with electricity consumption on account of the building owner :	
Total rated motor power, of all plumbing & drainage pumps (kW)	
Other installations, if applicable (please specify, and insert N/A if not applicable) <sup>^28</sup>	



## Part 2 – Historical Energy Consumption Analysis<sup>^29</sup>

(EAC Clause 8.1(g))

1) Annual electricity consumption of last 36-month (kWh/annum) (EAC Clause 8.1(g)ii))			
	(kWh/annum)	(kWh/annum)	(kWh/annum)
	Past 1 <sup>st</sup> 12-month	Past 2 <sup>nd</sup> 12-month	Past 3 <sup>rd</sup> 12-month
2) Annual consumption of energy <sup>^30</sup> other than electricity, of last 36-month (MJ/annum) (EAC Clause 8.1(g)ii)			
	(MJ/annum)	(MJ/annum)	(MJ/annum)
	Past 1 <sup>st</sup> 12-month	Past 2 <sup>nd</sup> 12-month	Past 3 <sup>rd</sup> 12-month
3) Annual total energy consumption, of last 36-month (MJ/annum) (sum of figures in 1) & 2)) (EAC Clause 8.1(g)iii)			
	(MJ/annum)	(MJ/annum)	(MJ/annum)
	Past 1 <sup>st</sup> 12-month	Past 2 <sup>nd</sup> 12-month	Past 3 <sup>rd</sup> 12-month
4) Annual Energy Utilisation Index (EUI) of last 36-month (MJ/m <sup>2</sup> /annum) (EAC Clause 8.1(g)ii) (Value in kWh/m <sup>2</sup> /annum can be obtained by dividing the MJ/m <sup>2</sup> /annum figure by 3.6)			
	(MJ/m <sup>2</sup> /annum)	(MJ/m <sup>2</sup> /annum)	(MJ/m <sup>2</sup> /annum)
	Past 1 <sup>st</sup> 12-month	Past 2 <sup>nd</sup> 12-month	Past 3 <sup>rd</sup> 12-month
5) Monthly EUI of past 1 <sup>st</sup> 12-month period (MJ/m <sup>2</sup> /month) (EAC Clause 8.1(g)iii))			
	1 <sup>st</sup> mth	2 <sup>nd</sup> mth	3 <sup>rd</sup> mth
	5 <sup>th</sup> mth	6 <sup>th</sup> mth	7 <sup>th</sup> mth
	9 <sup>th</sup> mth	10 <sup>th</sup> mth	11 <sup>th</sup> mth
			12 <sup>th</sup> mth <sup>^31</sup>
6) Annual energy consumption breakdown, of past 1 <sup>st</sup> 12-month period (MJ/annum) (EAC Clause 8.1(g)iv))			
	Air-conditioning <sup>^32</sup>	Lighting	Lift & Escalator
7) Energy supply from CBSI to building's units, as a percentage of the total energy consumption of past 1 <sup>st</sup> 12-month period (EAC Clause 8.1(h))			
			(%)
8) Energy bill reference month (month for which the most recent energy bill has been issued by the energy supply utility prior to commencement of energy audit, i.e. the 12 <sup>th</sup> month of item 5) ending on			
			(dd/mm/yyyy)

# Part 3 – Energy Management Opportunities (EMO)

Ref no.	EMO Category and Type	Description of EMO (Please provide information below) (EAC Clause 8.1 (l)i)
Please tick where applicable :		(Please insert additional rows, if necessary)
	<input type="checkbox"/> I <input type="checkbox"/> Lighting <input type="checkbox"/> Air-conditioning <input type="checkbox"/> II <input type="checkbox"/> Electrical <input type="checkbox"/> Lift/Escalator <input type="checkbox"/> III <input type="checkbox"/> Others	
	<input type="checkbox"/> I <input type="checkbox"/> Lighting <input type="checkbox"/> Air-conditioning <input type="checkbox"/> II <input type="checkbox"/> Electrical <input type="checkbox"/> Lift/Escalator <input type="checkbox"/> III <input type="checkbox"/> Others  <input type="checkbox"/> I <input type="checkbox"/> Lighting <input type="checkbox"/> Air-conditioning <input type="checkbox"/> II <input type="checkbox"/> Electrical <input type="checkbox"/> Lift/Escalator <input type="checkbox"/> III <input type="checkbox"/> Others	
	<input type="checkbox"/> I <input type="checkbox"/> Lighting <input type="checkbox"/> Air-conditioning <input type="checkbox"/> II <input type="checkbox"/> Electrical <input type="checkbox"/> Lift/Escalator <input type="checkbox"/> III <input type="checkbox"/> Others  <input type="checkbox"/> I <input type="checkbox"/> Lighting <input type="checkbox"/> Air-conditioning <input type="checkbox"/> II <input type="checkbox"/> Electrical <input type="checkbox"/> Lift/Escalator <input type="checkbox"/> III <input type="checkbox"/> Others	
	<input type="checkbox"/> I <input type="checkbox"/> Lighting <input type="checkbox"/> Air-conditioning <input type="checkbox"/> II <input type="checkbox"/> Electrical <input type="checkbox"/> Lift/Escalator <input type="checkbox"/> III <input type="checkbox"/> Others	
	<input type="checkbox"/> I <input type="checkbox"/> Lighting <input type="checkbox"/> Air-conditioning <input type="checkbox"/> II <input type="checkbox"/> Electrical <input type="checkbox"/> Lift/Escalator <input type="checkbox"/> III <input type="checkbox"/> Others	