



GBI Roadshow 2016

NEW TAX INCENTIVES FOR GREEN BUILDINGS

Supported by



Qualifying Capex (QE) for M&E items

22nd October 2016 – Johor Bahru
Ir TL Chen DL&F.ASHRAE, PEng, CEng
GBIAP Co-Chair



Green Income Tax Allowance (Project)

What are the eligible Green Cost items ?

(incremental capex costs)
(must score GBI criteria point)

Examples of GBI Green Cost M&E Items

Part	Criteria	Description (NRNC)
1.1	EE	Energy Efficiency
	EE1	Sun shading devices including automatic controls
	EE1	Energy Management System (incremental only)
	EE2	Daylight auto sensor devices for lighting control
	EE2	Motion sensor devices for lighting control
	EE3	Electrical sub-meters for EE monitoring
	EE4	RE such as Fuel Cells, Biomass, Hydro, Wind, Geothermal etc
	EE4	BIPVs and PVs (not under FiT program)
	EE4	Solar powered application viz STC

Examples of GBI Green Cost M&E Items cont'd

Part	Criteria	Description (NRNC)
1.1	EE	Energy Efficiency
	EE5	EE light fixtures
	EE5	Hot Water Heat Reclaim System viz Desuperheater System
	EE5	Variable Speed Drives
	EE5	High Efficiency Motors
	EE5	Enhanced HVAC systems such as TES, DCS, Cogen
	EE5	Enhanced HVAC technologies/ strategies viz UFAD, chilled slabs/ ceilings, Active/ Passive chilled beams

Examples of GBI Green Cost M&E Items cont'd

Part	Criteria	Description (NRNC)
1.2	EQ	Indoor Environmental Quality
	EQ3	CO ₂ Monitoring & controls for EE & IAQ
	EQ6	Additional controls and devices to enhance thermal controllability, viz VAV terminals
	EQ7	UFAD system, Dedicated work-station air supply system, LLD/TDV system
	EQ8	Light Shelves for Daylight Harvesting
	EQ9	Automated blind control, double glazing with sandwiched blinds, automated louvres
	EQ14	Permanent air flushing system

Examples of GBI Green Cost M&E Items cont'd

Part	Criteria	Description (NRNC)
1.3	SM	Sustainable Site Planning & Management
1.4	MR	Material & Resources
	MR7	Refrigerants and fire suppression (clean) agents (not eligible for CAPEX)
	WE	Water Efficiency
1.5	WE1	Rainwater Harvesting System
	WE2	Black Water Recycling System
	WE2	Grey Water Recycling System
	WE3	Water Efficient Fixtures & Flow Restrictors, automatic rain sensors and devices
	WE5	Water sub-meters for monitoring and leakage

Examples of GBI Green Cost M&E Items cont'd

Part	Criteria	Description (NRNC)
1.6	IN	Innovation
	IN1	Solar Thermal Technology viz STC
	IN1	Solar Light/ Tube Systems
	IN1	Heat Pipe Technology
	IN1	Heat Recovery System viz Heat Wheels
	IN1	Regenerative Lifts and Sensor Controlled Escalators
	IN1	Non-Chemical Cooling Tower Water Treatment System
	IN1	Auto-condenser tube cleaning system
	IN1	Advance Air Filtration technology

Examples of GBI Green Cost M&E Items cont'd

Part	Criteria	Description (NRNC)
1.6	IN	Innovation
	IN1	Central Pneumatic Waste Collection System
	IN1	Central Vacuum System
	IN1	Refrigerant leakage and recycling facilities
	IN1	Condensate Water Harvesting
	IN1	Recovery pipe for Fire Testing water (sprinkler system)
	IN1	Active Facade

GBI Tax Allowance

**What are the claimable items ?
(including Innovation items)**

What is the claimable (incremental) cost benchmarked against ?

What is Reference Base Cost ?

GBI Green Cost M&E Items

Criteria	Green Item	Ref Base Cost	Remarks
EE5	Magnetic chillers	Electric Chiller with min. COP in MS 1525	Claimable on difference between the same capacity magnetic chiller and electric chiller
EE5	DX ACPU and WCPU	Minimum COP in MS 1525	Compare 'Like to Like' eqpt; viz WCPU to WCPU
EE5	Absorption Chiller	Electric Chiller with min. COP in MS 1525	
EE5	Chiller/ Unitary AC	Min. COP in MS 1525	Compare 'Like to Like'
MR7	HFC, HFO, Natural Refrigerants	HCFC	Not eligible for CAPEX

GREEN COST CAN ONLY BE CLAIMED WHEN AT LEAST ONE CREDIT POINT IS AWARDED FOR THAT CRITERIA

GBI Green Cost M&E Items

Criteria	Green Item	Ref Base Cost	Remarks
EE1	Energy Management System	Base EMS installation	100% claimable if ac space < 4000 m ² . Otherwise, only the additional cost apply
EE5	VSD	Nil	100% claimable
EQ3	CO ₂ Sensor & Monitoring	Nil	100% claimable
IN1	Heat Pipes	Nil	100% claimable
IN1	Heat Recovery Wheels	Nil	100% claimable

GBI Green Cost M&E Items

Criteria	Green Item	Ref Base Cost	Remarks
WE1	Rainwater Harvesting System	Nil	100% claimable (excl base gutters etc)
WE2	Grey Water Recycling Sys	Nil	100% claimable
WE2	Black Water Recycling Sys	Nil	100% claimable
WE3	WE Irrigation System	Conventional Base Design	
WE5	Water Sub-metering	Nil	100% claimable for GBI compliance

GBI Green Cost Items

Criteria	Green Item	Ref Base Cost	Remarks
EE5	Eff1/IE3 Motors	Standard Motors	
IN1	Central Vacuum System	Nil	100% claimable
IN1	Central Pneumatic Waste System	Nil	100% claimable
IN1	Condensate Water Harvesting	Base Condensate Water Piping	Associated Additional Cost
IN1	Recycled Fire System Piping	Nil	100% claimable

GBI Green Cost M&E Items contd

Service	Criteria	Green Item	Ref Base Cost	Remarks
NRNC Electrical System				
Lighting	EE5	T16/T5 Fixtures	T26/TL8 Fixtures	Rapidly decreasing incremental cost
	EE5	TC/CFL	Incandescent equiv	
	EE5	LED	Incandescent or T26/TL8 equiv	
	EE5; IN1	Solar Powered Light Fixtures	Electric Powered Fixtures	
	EQ11	Electronic Ballasts	Electromagnetic Ballasts	
	EE5; IN1	LED for Façade Lighting	Base Design (PAR or HID Lamps)	

GBI Green Cost M&E Items contd

Service	Criteria	Green Item	Ref Base Cost	Remarks
NRNC Electrical System				
Others	EE2	Occupancy/ Motion Sensors	Nil	100% claimable
	EE2	Photo Sensors	Nil	100% claimable
	EE3	Electric Sub- metering	Base sub- metering	Cost of additional EE monitoring meters for GBI compliance
	EE4	PVs (non FiT)	Nil	100% claimable
	EE4	BIPVs	Base roofing	
	EE4	Other RE devices	Nil	100% claimable
	IN1	Solar Light Pipes/ Tubes	Nil	100% claimable

GBI Green Cost M&E Items contd

Service	Criteria	Green Item	Ref Base Cost	Remarks
NRNC Elevators & Escalators				
Lifts	EE5	ACVVVF Gearless Lifts	ACVVVF Geared Lifts	Applicable only if Geared Lifts are available for the installed capacity
	EE5; IN1	Regenerative Lifts or equiv	ACVVVF Geared Lifts	If Geared Lifts are not available for the installed capacity then Gearless apply
Escalators	EE5	Variable Speed/ Auto Start Stop or equiv Escalators	Single Speed Escalators	

GBI Green Cost M&E Items contd

Service	Criteria	Green Item	Ref Base Cost	Remarks
NRNC Hydraulics System				
Plumbing System	WE1	Rainwater Harvesting System	Nil	100% claimable (excl base gutters etc)
	WE2	Grey Water Recycling Sys	Nil	100% claimable
	WE2	Black Water Recycling Sys	Nil	100% claimable
	WE3	WE Irrigation System	Conventional Base Design	
	WE5	Water Sub-metering	Nil	100% claimable for GBI compliance

GBI Green Cost M&E Items contd

Service	Criteria	Green Item	Ref Base Cost	Remarks
NRNC Hydraulics System				
Plumbing System	EE5	Gas Instantaneous Water Heater	Electric Instantaneous Water Heater	
	EE5	Electric Heat Pump/ Machine Hot Water System	Electric Storage Hot Water System	
	EE5	Hot Water Heat Reclaim System	Electric Storage Hot Water System	
	EE5	Solar Hot Water System	Electric Storage Hot Water System	

GBI Green Cost M&E Items contd

Service	Criteria	Green Item	Ref Base Cost	Remarks
NRNC Others & Innovations				
Motors	EE5	Eff1/IE3 Motors	Standard Motors	
Innovation	IN1	Central Vacuum System	Nil	100% claimable
	IN1	Central Pneumatic Waste System	Nil	100% claimable
	IN1	Condensate Water Harvesting	Base Condensate Water Piping	Associated Additional Cost
	IN1	Recycled Fire System Piping	Nil	100% claimable

GBI Green Cost M&E Items

NOTES:

- **This list is not exhaustive and serves as a guide for items not included.**
- Clarifications are welcome before submission.
- **Green Cost submission can only be done after CVA stage.**

60% of main equipment/assets in GITA Project must be recognised and registered under the MyHIJAU Mark **OR** have product certification recognised and accepted by MGTC such as Green Pages Malaysia (GPM)

Investment Tax Allowance

PROCEDURE

- Submission of Green Cost can only proceed after GBI CVA certificate is issued.
- Green Cost submissions must be endorsed by the respective qualified professionals (Ar, Sr and Ir)

Is there any template submission document ?

Template for Green Cost Submission

Qualifying **Capital** Expenditure (QE) submission

1. Overall Summary of QE/Green Cost comprising the 6 GBI Criteria
2. Breakdown Summary of each Criteria
3. Appendices to support each breakdown item

Template for Green Cost Submission

Qualifying **Capital** Expenditure (QE) submission

- 1. Overall Summary** of QE/Green Cost comprising the 6 GBI Criteria
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OVERALL SUMMARY

Project Name: XX Office Tower, Selangor
Owner's Name: YY Sdn Bhd
GBI Certification: NRNC GOLD
CCC date: 28 April 2011
Total Construction Cost: RM227,800,000
GFA (Cost/m²): 130,500m² (RM1,746)

No	GBI NRNC CRITERIA	Capital Expenditure without Green Cost RM	Capital Expenditure with Green Cost RM	Qualifying Expenditure RM
1	EE	5,068,900	12,581,300	7,512,400
2	EQ	1,000,400	3,452,700	2,452,300
3	SM	0	920,800	920,800
4	MR	0	0	0
5	WE	196,500	1,037,600	841,100
6	IN	7,400,000	15,939,400	8,539,400
TOTAL				20,266,000

We certify that this cost is in accordance with the terms of the GBI guidelines:

SR QQQQQQ

AR XXXXXX

IR M&EM&E

Template for Green Cost Submission

Qualifying **Capital** Expenditure (QE) submission

1. Overall Summary of QE/Green Cost comprising the 6 GBI Criteria
- 2. Breakdown Summary of each Criteria**
3. Appendices to support each breakdown item

BREAKDOWN SUMMARY

Item	Description	Criteria	Capital Cost without Green RM	Capital Cost with Green RM	Qualifying Expense RM	App
1	Energy Efficiency (EE)	EE				
1.1	Sunshading Devices	EE1	0	492,400	492,400	A1
1.2	Low-e glazing	EE1	1,218,700	2,900,400	1,681,700	A1
1.3	Aerated Bricks	EE1	201,400	469,400	268,000	A1
1.4	BAS (incremental only)	EE1	0	1,440,800	1,440,800	A1
1.5	Photo & Motion Sensors	EE2	0	585,400	585,400	A1
1.6	Digital Power Meters	EE3	160,800	758,100	597,300	A2
1.7	Variable Speed Drives	EE5	0	1,277,800	1,277.800	A2
1.8	High EE Chillers	EE5	3,488,000	3,989,200	501,200	A2
1.9	Thermal Chw Plant Ctrl Sys	EE5	0	465,900	465,900	A2
1.10	High EE Motors for:					
	Chw pumpsets, CTs (incr only)	EE5	0	80,200	80,200	A2
	AHU (incremental only)	EE5	0	121,700	121,700	A2
	TOTAL C/F				7,512,400	

BREAKDOWN SUMMARY

Item	Description	Criteria	Capital Cost without Green RM	Capital Cost with Green RM	Qualifying Expense RM	App
1	Energy Efficiency (EE)	EE				
1.1	Sunshading Devices	EE1	0	492,400	492,400	A1
1.2	Low-e glazing	EE1	1,218,700	2,900,400	1,681,700	A1
1.3	Aerated Bricks	EE1	201,400	469,400	268,000	A1
1.4	BAS (incremental only)	EE1	0	1,440,800	1,440,800	A1
1.5	Photo & Motion Sensors	EE2	0	585,400	585,400	A1
1.6	Digital Power Meters	EE3	160,800	758,100	597,300	A2
1.7	Variable Speed Drives	EE5	0	1,277,800	1,277.800	A2
1.8	High EE Chillers	EE5	3,488,000	3,989,200	501,200	A2
1.9	Thermal Chw Plant Ctrl Sys	EE5	0	465,900	465,900	A2
1.10	High EE Motors for:					

We certify that this cost is in accordance with the terms of the GBI guidelines:

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Template for Green Cost Submission

Qualifying **Capital** Expenditure (QE) submission

1. Overall Summary of QE/Green Cost comprising the 6 GBI Criteria
2. Breakdown Summary of each Criteria
- 3. Appendices** to support each breakdown item

APPENDIX **A1**

Item	Description		Crit	Base Cost				Green Cost			BQ	QE
	Base	Green		Unit	Qty	@	Amt	Qty	@	Amt	ref	RM
1.1	Nil	Perforated Sheet for sun shade	EE1	-	-	-	-	860	460	395600	LA:3	395600
1.1a	Nil	Hori Fin	EE1	-	-	-	-	242	400	96800	LA:3	96800
Sub-total for Item 1.1 – Shading Devices											492400	
1.2	9.38 mm Laminated Clear Glass	9.38 mm Laminated low-e glass	EE1	m ²	7283	161	1172563	7283	376	2738408	LA:4	1565845
1.2a	9.38 mm Laminated Clear Glass	9.38 mm Laminate low-e with ceramic frit	EE1	m ²	265	161	42787	265	598	158642	VO5	115855
Sub-total for Item 1.2 – Low-e Glazing											1681700	

We certify that this cost is in accordance with the terms of the GBI guidelines:

SR QQQQQQ

AR XXXXXX

IR M&EM&E

BREAKDOWN SUMMARY

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1	Energy Efficiency (EE)	EE				
1.1	Sunshading Devices	EE1	0	492,400	492,400	A1
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1.9	Thermal Chw Plant Ctrl Sys	EE5	0	465,900	465,900	A2
1.10	High EE Motors for:					
	Chw pumpsets, CTs <small>(incr)</small>	EE5	0	80,200	80,200	A2
	AHU (incremental only)	EE5	0	121,700	121,700	A2
	TOTAL C/F				7,512,400	

Investment Tax Allowance

Who is authorized to verify and/or certify these costs ?

Investment Tax Allowance

Signatories for submission

Cost Category	NRNC	INC
Overall Submission	Ar	Ar or Ir (C)
All Costs except M&E items	Sr	Sr
Costs for M&E items	Ir (M or E)	Ir (M or E)

Investment Tax Allowance

Signatories for submission

Cost Category	NREB ¹	NREB ²	NREB ³	NREB ⁴	NREB ⁵	NREB ⁶
Overall Submission	Ar	Ar	Sr	Ir (C)	Ir (M or E)	X
All Costs except M&E items	Sr	Ar	Sr	Ir (C)	Ir (M or E)	X
Costs for M&E items	Ir (M or E)	Ir (M or E)	Ir (M or E)	Ir (M or E)	Ir (M or E)	X

¹ denotes the full compliment of consultants are engaged for the retrofit building

² denotes only Ar, Ir (C) and Ir (M&E) are engaged for the retrofit building

³ denotes only Sr, Ir (C) and Ir (M&E) are engaged for the retrofit building

⁴ denotes only Ir (C) and Ir (M&E) are engaged for the retrofit building

⁵ denotes only Ir (M&E) are engaged for the retrofit building

⁶ denotes only one discipline of Professional (denoted as X i.e. Ar or Sr or Ir <of any discipline>) is engaged for the retrofit building

Investment Tax Allowance

Can any Ar, Sr and Ir be the signatories ?

Investment Tax Allowance

- **Ar** denotes a Professional Architect registered with Lembaga Arkitek Malaysia and practising through an Architectural Consultancy Practice
- **Sr** denotes a Consultant or Professional Quantity Surveyor registered with Lembaga Juruukur Bahan Malaysia and practising through a QS Consultancy Practice
- **Ir** denotes a Professional Engineer with Practising Certificate registered with Lembaga Jurutera Malaysia and practising through an Engineering Consultancy Practice
- **Ir (M or E, C)** denotes Professional Engineer with Practising Certificate of Mechanical or Electrical, or Civil discipline

Does *green* pay off (in Malaysia)?
 - Non-Residential Buildings -
 projected data by Ir TL Chen (not verified:2009)

Green Building Index Rating	Average M'sian Bldg	Meets MS1525	GBI Certified	GBI Silver	GBI Gold	GBI Platinum
BEI kWh/m ² .year	250	200 - 220	150 - 180	120 - 150	100- 120	<100
Energy Savings %	Base	10 - 20	30 - 40	40 -50	50 - 60	> 60
Incremental construction cost %	Base	1 - 3 (0 - 3)* -	5 - 8 (1 - 5)* (0 - 2)#	8 - 12 (3 - 8)* (1 - 3)#	12 - 15 (5 - 10)* (3 - 5)#	>15 (6 - 13)* (5 - 8)#

* Denotes revised projection in 2011
 # Available real data up to 2014



THANK YOU

www.greenbuildingindex.org

www.mgbc.org.my