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# **BCA Green Mark for Restaurants**

**Version 1.0**

**To achieve Green Mark Certified**

**Non-Green Mark Base building**

<p><b><u>ENERGY EFFICIENCY</u></b></p> <p><b>Energy Policy &amp; Management</b> Annual disclosure of restaurant energy consumption data and energy use intensity (kWh/m<sup>2</sup>/year) to BCA</p> <p><b>Lighting and Controls</b> To calculate Lighting Power Budget improvement (up to 40%), full LED installation, and use lighting control circuits such as provision of zoning for different usage/location, scheduling control, and controllability of lighting system</p> <p><b>Lighting Quality</b> To achieve lighting level for kitchen to be at least 300 lux, and to provide good level of daylighting for dining customers</p> <p><b>Thermal Comfort</b> Comfort level - Comply with SS 553 (23 Degree Celsius and above)</p>
<p><b><u>WATER EFFICIENCY</u></b></p> <ul style="list-style-type: none"> <li>• To achieve Water Efficiency Labelling Scheme (WELS) rating based on ‘Very Good’, for basins, taps, flushing cisterns, showers, sink/bib taps and mixers, urinals and/or all other water fittings, provide private meters for major water uses (e.g. pre-rinse spray valve, kitchen etc), and to keep track of water consumption</li> <li>• Demonstrate at least two (2) water efficient practices: (i) to place frozen food in the refrigerator the night before using it for thawing purposes, (ii) to display water conservation posters and (iii) to inform patrons that water will only be served upon request</li> </ul>
<p><b><u>SUSTAINABLE MANAGEMENT &amp; OPERATION, INDOOR ENVIRONMENT QUALITY</u></b></p> <ul style="list-style-type: none"> <li>• Demonstrate use of (i) at least two (2) types of environmental friendly products in renovation, <u>and</u> (ii) at least two (2) types cleaning products recognised under local certification bodies, <u>OR</u> At least three (3) sustainable consumable materials (e.g. packaging, wrappers, cups, utensils, napkins etc.)</li> <li>• Provision of recycling facilities for food waste and used frying oil <u>OR</u> To display SOP to ensure good indoor environment through proper cleaning practice, schedule and hygiene practice in kitchen</li> <li>• Good access to nearest MRT/LRT or bus stops <u>OR</u> Provide customer feedback survey form to gather feedback on services, environment, etc.</li> <li>• Food safety management (according to NEA’s Grade A)</li> </ul>

**OTHER GREEN FEATURES AND INNOVATIONS**

**Display of Green Mark Award**

To display Green Mark certificate or Green Mark decal at a prominent location.

OR

Demonstrate at least one (1) green features.

Other Examples:

To include food or beverages with healthier choice logo, to provide internal staircases, to display environmental sustainability posters, to introduce e-marketing to encourage paperless, to have green lease agreement with landlord etc.

**Point Allocations - BCA Green Mark for Restaurants**

Category		Point Allocations	
<b>(I) Energy Related Requirements</b>			
<b>Minimum 20 points</b>	<b>Part 1 : Energy Efficiency</b>		
	1-1 Energy Efficiency	5	
	1-2 Electricity Usage	2	
	1-3 Air-conditioning	10	
	1-4 Lighting	16	
	1-5 Kitchen Equipment	10	
	1-6 Energy Efficient Features	7	
	<b>Category Score for Part 1 – Energy Efficiency</b>		<b>50</b>
<b>(II) Other Green Requirements</b>			
	<b>Part 2 : Water Efficiency</b>		
	2-1 Water Efficient Fittings	11	
	2-2 Water Usage	2	
	2-3 Water Efficient Practices	4	
	2-3 Water Efficiency Improvement Plans	3	
	<b>Category Score for Part 2 – Water Efficiency</b>		<b>20</b>
	<b>Part 3 : Sustainable Management &amp; Operation</b>		
	3-1 Sustainable Consumable Materials	6	
	3-2 Sustainable Material Selection	5	
	3-3 F&B Operation & Maintenance	6	
	3-4 Post Occupancy Evaluation	4	
	3-5 Waste Management	5	
	3-6 Greenery	2	
	3-7 Public Transport Accessibility	2	
	<b>Category Score for Part 3 – Sustainable Management &amp; Operation</b>		<b>30</b>
	<b>Part 4 : Indoor Environmental Quality</b>		
	4-1 IAQ Performance	6	
	4-2 Indoor Air Pollutants	5	
	4-3 Lighting Quality	4	
	4-4 Thermal Comfort	4	
	<b>Category Score for Part 4 – Indoor Environmental Quality</b>		<b>19</b>
	<b>Part 5 : Other Green Features</b>		
5-1 Green Features & Innovations	6		
<b>Category Score for Part 5 – Other Green Features</b>		<b>6</b>	
<b>Total Points Allocated :</b>		<b>125</b>	

**BCA Green Mark Award Rating**

Green Mark Points	Green Mark Rating
95 and above	Green Mark Platinum
85 to < 95	Green Mark Gold <sup>Plus</sup>
75 to < 85	Green Mark Gold
50 to < 75	Green Mark Certified

**Elective Requirements**

Part 1 - Energy Efficiency	Green Mark Points
<p><b><u>1-1 Energy Efficiency</u></b></p> <p>(a) Encourage selection of energy efficient base building</p> <p style="text-align: center;"><u>Option A</u></p> <p>Building demonstrate 30% energy savings over last three years</p> <p style="text-align: center;">Or</p> <p style="text-align: center;"><u>Option B</u></p> <p>Calculating the restaurant’s Energy Efficient Index (EEI)</p> <p>If the restaurant’s EEI (exclude kitchen equipments) are 330 kWh/m<sup>2</sup>/year or better</p> <p>(b) Encourage restaurants with energy efficiency improvement plan</p> <p>Setting target to improve outlet energy performance.</p> <p>To show intent, measures and implementation strategies of energy efficiency improvement plans over the next three years.</p> <p>Committed energy savings accrued from proposed measures should be quantified.</p>	<p style="text-align: center;"><u>Option A</u></p> <p style="text-align: center;">3 points</p> <p style="text-align: center;">Or</p> <p style="text-align: center;"><u>Option B</u></p> <p style="text-align: center;">1 point</p> <p style="text-align: center;">2 points</p> <p style="text-align: center;">2 points</p>
<p><b><u>1-2 Electricity Usage</u></b></p> <p>Encourage the design of system that monitor and manage electricity consumption</p> <p>Provision of sub-meter to monitor electricity use of different services such as air-conditioning, lighting, kitchen equipment, etc.</p> <p>Monitoring of electricity consumption.</p>	<p style="text-align: center;">1 point</p> <p style="text-align: center;">1 point</p>
<p><b><u>1-3 Air-conditioning</u></b></p> <p>Encourage the use of better efficient air-conditioning to minimize energy consumption</p> <p>(a) A/C system efficiency</p> <p>Use of air-conditioning system which meet the</p>	

<p>efficiency requirement of the air-conditioning system stated in SS 530</p> <p>(b) Zoning and controls</p> <p>(i) Encourage the use of air-conditioning design practices that offer greater flexibility and making it earlier to serve area with different usage efficiently, such as the following</p> <ul style="list-style-type: none"> <li>• Zoning of air-conditioning system to serve areas with different usage/ occupancies needs</li> <li>• Scheduling control to switch on and/or off the air-conditioning with some localized override control where air-conditioning is needed beyond the scheduled period</li> </ul> <p>(ii) If sensors or similar automatic control devices are used to regulate outdoor air flow rate to maintain the concentration of carbon dioxide (CO<sub>2</sub>) inside the restaurant not more than 700ppm above the outdoor CO<sub>2</sub></p> <p>(iii) Positive pressurization of dining areas to prevent infiltration of hot humid air and pollutants from outside</p>	<p>1point</p> <p>(Up to 5 points)</p> <p>2 points</p> <p>2 points</p>
<p><b><u>1-4 Lighting</u></b></p> <p>Encourage the use of better efficient lighting to minimise energy consumption from lighting usage while maintaining proper lighting level.</p> <p>(a) Lighting power budget</p> <p>Baseline = Maximum lighting power budget stated in SS530</p> <p>(b) Lighting controls</p> <p>Encourage the use of lighting control circuits to minimize energy usage, such as provision of the following control strategies</p> <p>(i) Zoning of lighting for different usage/ location</p>	<p>0.3 point for every percentage improvement above the baseline</p> <p>Points awarded = 0.3 x (% improvement)</p> <p>(up to 12 points)</p> <p>(Up to 4 points)</p>

<p>(ii) Scheduling control to switch on and/or off the lightings with some localized override control where lighting is needed beyond the scheduled period</p> <p>(iii) Controllability of lighting system to suit staff need where applicable</p>	
<p><b><u>1-5 Kitchen Equipment</u></b></p> <p>Encourage the use of energy efficient kitchen equipment to save energy.</p> <p>Use of energy efficient kitchen equipment such as</p> <ul style="list-style-type: none"> <li>• Deep Fryers</li> <li>• Grills</li> <li>• Ovens</li> <li>• Freezers</li> <li>• Cold rooms</li> </ul>	<p>Points awarded based on the number and energy efficiency rating of the equipment use</p> <p>(up to 10 points)</p>
<p><b><u>1-6 Energy Efficient Features</u></b></p> <p>Encourage the use of energy efficient features which are innovative and/or have positive environmental impact.</p> <p>Examples :</p> <ul style="list-style-type: none"> <li>■ Use of heat exchanger</li> <li>■ Use of motion sensors for areas with un-frequent usage</li> </ul>	<p>2 points for high impact item</p> <p>1 point for medium impact item</p> <p>0.5 point for low impact item</p> <p>(Up to 7 points)</p>
<p style="text-align: center;"><b>PART 1 – ENERGY EFFICIENCY CATEGORY SCORE :</b></p>	

Part 2 – Water Efficiency	Green Mark Points
<p><b><u>2-1 Water Efficient Fittings</u></b></p> <p>Encourage the use of water efficient fittings covered under the Water Efficiency Labelling Scheme (WELS) or adopt equivalent water efficient flow rates for water fittings</p> <p>(a) Basin Taps and Mixers                      (b) Flushing Cistern                      (c) Showers                      (d) Sink/Bib Taps and Mixers                      (e) Urinals                      (f) All other water fittings</p> <p><i>Note:</i>                      A PUB Water Efficient Building would be entitled to 4 points</p> <p>Use of Water Efficient Equipment such as:-</p> <ul style="list-style-type: none"> <li>• Pre-rinse spray valve (&lt; 6 L/ min)</li> <li>• Dishwasher</li> <li>• Air-cooled ice-making machine</li> </ul>	<p>Rating based on Water Efficiency Labelling Scheme (WELS)</p> <p>Very Good – 4 points                      Excellent – 6 points</p> <p>Points awarded based on the number and water efficiency rating of the fitting type used</p> <p>(up to 5 points)</p>
<p><b><u>2-2 Water Usage</u></b></p> <p>Provide the use of private-metering and leak detection system for better control and monitoring</p> <p>(a) Provision of private meters for major water uses (e.g. pre-rinse spray valve, dishwasher, kitchen and common toilets)</p> <p>(b) To keep track of water consumption</p>	<p>1 point</p> <p>1 point</p>
<p><b><u>2-3 Water Efficient Practices</u></b></p> <p>Adopt water efficient practices such as:-</p> <ul style="list-style-type: none"> <li>• Placing frozen food in the refrigerator the night before using it for thawing purposes;</li> <li>• Displaying water conservation posters in the premises;</li> <li>• Involvement of patrons by displaying water conservation cards that inform patrons that water will only be served on request.</li> </ul>	<p>(up to 4 points)</p>

<p><b><u>2-4 Water Efficiency Improvement Plans</u></b></p> <p>Targets to improve restaurant’s water performance should be set. To show intent, measures and implementation strategies of water efficiency improvement plans over the next three years.</p> <p>Committed water savings accrued from proposed measures should be quantified.</p> <p>Complete and submit Water Efficient Management Plan to PUB. The plan shall include targets to improve restaurant’s water performance baseline, a breakdown of the current water use, list of water saving measures and an implementation timeline for the measures over the next 3 years.</p>	<p>1 point</p> <p>2 points</p>
<p style="text-align: center;"><b>PART 2 – WATER EFFICIENCY</b></p> <p style="text-align: center;"><b>CATEGORY SCORE :</b></p>	

<b>Part 3 – Sustainable Management &amp; Operation</b>	<b>Green Mark Points</b>
<p><b><u>3-1 Sustainable Consumable Materials</u></b></p> <p>Encourage the selection of consumable materials that is environmentally friendly and sustainable, such as the use of those materials which are recyclable/ recycled / non-disposable</p> <ul style="list-style-type: none"> <li>• Food wrappers</li> <li>• Food containers</li> <li>• Carry out bags</li> <li>• Cups</li> <li>• Plates</li> <li>• Serving utensils</li> <li>• Toilet rolls</li> <li>• Napkins/servettes</li> </ul>	<p>(up to 6 points)</p>
<p><b><u>3-2 Sustainable Material Selection</u></b></p> <p>Encourage the adoption of materials that are environmentally friendly and sustainable.</p> <p>(a) Maintain at least 50% (by volume) of the existing furniture or equipment</p> <p>(b) Use of sustainable products in renovation such as :</p> <ul style="list-style-type: none"> <li>• Environmental friendly products that are certified under local certification body</li> <li>• Products with at least 30% recycled content by weight or volume</li> </ul>	<p>2 points</p> <p>1 point for high impact item 0.5 point for low impact item (Up to 3 points)</p>
<p><b><u>3-3 F&amp;B Operation &amp; Management</u></b></p> <p>Commitment from tenant – environmental policy</p> <p>A green guide for the restaurant staff should be disseminated. Best practices to reduce energy use, water use and maintain a good indoor environment should be documented in this green guide. To demonstrate evidences of restaurant staff involvement in environmental sustainability.</p> <p>Food safety management – according to NEA’s grading system</p>	<p>1 point</p> <p>2 points</p> <p>Graded A - 3 points</p>

<p><b><u>3-4 Post Occupancy Evaluation</u></b></p> <p>Conduct yearly post occupancy evaluation to assess staff’s satisfaction with the indoor environmental conditions.</p> <p>Provide customer feedback survey form in obvious location to facilitate customer to give feedback on services, environment, etc</p> <p>List of corrective actions taken following the staff and customer feedback.</p>	<p>2 points</p> <p>1 point</p> <p>1 point</p>
<p><b><u>3-5 Waste Management</u></b></p> <p>Encourage recycling facilities within the restaurant to reduce wastage.</p> <p>Provision of recycling facilities for</p> <ul style="list-style-type: none"> <li>• Food waste</li> <li>• Used frying oil</li> </ul> <p>Waste collecting and monitoring</p> <p>Waste management improvement plan</p>	<p>(up to 3 points)</p> <p>1 point</p> <p>1 point</p>
<p><b><u>3-6 Greenery</u></b></p> <p>Encourage greater use of greenery to create a more conducive office environment such as planter or potted plants</p>	<p>Extent of Coverage : At least 1% of the F&amp;B area 1 point</p> <p>Extent of Coverage : At least 2% of the F&amp;B area 2 points</p>
<p><b><u>3-7 Public Transport Accessibility</u></b></p> <p>Promote the use of public transport or bicycles to reduce pollution from individual car use.</p> <p>(a) Good access to nearest MRT/LRT or bus stops.</p> <p>(b) Adequate bicycles parking lots.</p>	<p>1 point</p> <p>1 point</p>
<p><b>PART 3 – ENVIRONMENTAL PROTECTION</b></p> <p><b>CATEGORY SCORE :</b></p>	

Part 4 – Indoor Environmental Quality	Green Mark Points
<p><b><u>4-1 IAQ Performance</u></b></p> <p>Encourage and recognize good indoor air quality (IAQ) to ensure the comfort and wellbeing of office occupants</p> <p>(a) SOP to ensure good indoor environment through proper cleaning practice and schedule and hygiene practice</p> <p>(b) Prevent migration of odours and other pollutants from the kitchen to the dining areas by implementing effective kitchen exhaust.</p> <p>(c) Provision of odour removal system for toilets and dining areas</p>	<p>2 points</p> <p>2 points</p> <p>2 points</p>
<p><b><u>4-2 Indoor Air Pollutants</u></b></p> <p>Minimise airborne contaminants, mainly from inside sources to promote a healthy indoor environment.</p> <p>Use and purchase of environmental- friendly products such as</p> <ul style="list-style-type: none"> <li>• cleaning products recognised under local certification body</li> <li>• Soap for customers</li> </ul> <p>Setting of environmental-friendly procurement and purchasing policy</p>	<p>(Up to 4 points)</p> <p>1 point</p>
<p><b><u>4-3 Lighting Quality</u></b></p> <p>To encourage good workplace lighting quality to promote safety and productivity and comfort of kitchen staff</p> <p>Lighting level for kitchen – 300lux</p> <p>To encourage and recognize designs that provides good level of day lighting for dining customers</p>	<p>2 points</p> <p>2 points</p>
<p><b><u>4-4 Thermal Comfort</u></b></p> <p>Ensure thermal comfort of office occupants</p> <p>(a) Comfort level Comply with SS 553</p>	

(b) Controllability of temperature	2 points  2 points
<b>PART 4 – INDOOR ENVIRONMENTAL QUALITY CATEGORY SCORE :</b>	

<b>Part 5 – Other Green Features</b>	<b>Green Mark Points</b>
<p><b><u>5-1 Green Features and Innovations</u></b></p> <p>Encourage the use of other green features which are innovative and/or have positive environmental impact.</p> <p>Examples :</p> <ul style="list-style-type: none"> <li>■ CO2 monitoring of kitchen area to detect leakage of CO2 from CO2 cylinders used in making carbonated drinks</li> <li>■ Air sterilization system to limit the level of bacteria, mould and other bio-contaminants</li> <li>■ Treatment of kitchen exhaust with green technologies such as UVC emitters, electronic air filtration, etc</li> <li>■ Green wall</li> <li>■ etc</li> </ul>	<p>2 points for high impact item</p> <p>1 point for medium impact item</p> <p>0.5 point for low impact item</p> <p>(Up to 6 points)</p>
<b>PART 5 – OTHER GREEN FEATURES CATEGORY SCORE :</b>	

## Green Mark Score

$$\text{Green Mark Score} = \sum \text{Category Score [ (Part 1 – Energy Efficiency) + (Part 2 – Water Efficiency) + (Part 3 – Sustainable Management & Operation) + (Part 4 – Indoor Environmental Quality) + (Part 5 – Other Green Features)]}$$