



**Guideline on
National Energy and Green Technology
Award 2018 (NEGTA 2018)**

for

Energy Efficient Buildings



1.0 Objectives of Competition

- 1.1 To promote awareness on Energy Efficiency and Conservation (EE&C) in buildings and to promote greater public and private sectors participation in EE&C best practices.
- 1.2 To increase the public's level of awareness in energy efficient buildings.
- 1.3 To contribute in reducing CO₂ emissions and to promote measures to address climate change resiliency.
- 1.4 To enhance eco-friendly supply chain and create a market for green building technologies, materials and products.
- 1.5 To adopt, develop and apply the green building principles in the design of the built environment.

2.0 Competition Categories

2.1 Green Building

- Building has gross floor area (GFA) more than 300m² (excluding car park area)
- The age of the building must be not more than 5 years' old

2.2 EE Designed Building

- The age of the building must be not more than 5 years' old

2.3 Retrofitted Building

- Building where major changes and improvements have already been introduced to improve energy efficiency
- The age of the building must be at least 5 years' old

2.4 Tropical Building

- Air-conditioning area of less than 50% of total GFA
- Give high emphasis on effective use of passive design
- GFA more than 500m² (excluding car park area)
- Exclude religious buildings

3.0 Pre-Qualification Requirements

No.	Green Building	EE Designed Building	Retrofitted Building	Tropical Building
1	<p><u>Building's Age:</u></p> <ul style="list-style-type: none"> The age of the building must be not more than 5 years' old <p><u>Building's Area:</u></p> <ul style="list-style-type: none"> GFA more than 300m² (excluding car park area) 	<p><u>Building's Age:</u></p> <ul style="list-style-type: none"> The age of the building must be not more than 5 years' old 	<p><u>Building's Age:</u></p> <ul style="list-style-type: none"> The age of the building must be at least 5 years' old <p><u>Total Energy Saving:</u></p> <ul style="list-style-type: none"> 20% of the total energy consumption for A/C retrofits 10% of the total energy consumption for non-A/C retrofits 	<p><u>Building's Area:</u></p> <ul style="list-style-type: none"> Air-conditioning area less than 50% of total GFA GFA more than 500m² (excluding car park area)
2	At least 1 full-year of operation prior to nomination in national competition		At least 1 full-year of operation after retrofitting prior to nomination in national competition	At least 1 full-year of operation prior to nomination in national competition
3	<p>Maximum Energy Efficiency Index of Occupied Air-conditioned Area (Normalised to 2,000 operation hours):</p> <ul style="list-style-type: none"> Office – 160 kWh/m²/year Library – 160 kWh/m²/year Retails/Shopping malls - 192 kWh/m²/year Hotel - 216 kWh/m²/year Hospital - 288 kWh/m²/year 			<p>Maximum Energy Efficiency Index: 150 kWh/m²/year base on GFA (Normalised to 2,000 operation hours)</p>
4	<p>Temperature and Other Setting</p> <ul style="list-style-type: none"> Not less than 21°C but not more than 26°C RH: Maximum 70% (applies to air-conditioning) 			<p>Temperature and Other Setting</p> <ul style="list-style-type: none"> Not less than 21°C but not more than 26°C
5	<p>Lighting Load (Gross Floor Area)</p> <ul style="list-style-type: none"> Office - Maximum 12 watts/m² (gross floor area) Other - Maximum 20 watts/m² 			
6	Minimum Operating hours/year: 2,000 hours/year			

4.0 Criteria and Distribution of Scores by Categories

4.1 Green Building Category

No.	Criteria	Marks Allocation
1	Energy Efficiency (Active and Passive Designs)	30%
2	Renewable Energy	5%
3	Water Efficiency	10%
4	Environmental Sustainability (Materials, Greenery, Sustainable Site, Waste Management, etc.)	25%
5	Indoor Environmental Quality	20%
6	Operation and Maintenance & Other Green	10%
	Total	100%

4.2 EE Designed, Retrofitted and Tropical Building Categories

Criteria and Mark Structures				
No.	Criteria Group	Marks Allocation		
		EE Designed Building	Retrofitted Building	Tropical Building
1	Overall Site Design	15%	-	20%
2	Energy Saving Achieved	-	25%	-
3	Passive Design	25%	15%	40%
4	Active Design	25%	25%	15%
5	Maintenance & Management	25%	25%	15%
6	Environmental impacts	10%	10%	10%
	Total	100%	100%	100%

5.0 Format of Submission

Please refer attachments below for format of submission for each category.

- i. Attachment 1 – Submission Format for Green Building category
- ii. Attachment 2 – Submission Format for EE Designed Building category
- iii. Attachment 3 – Submission Format for Retrofitted Building category
- iv. Attachment 4 – Submission Format for Tropical Building category

Note: Applicants are required to submit 6 original hardcopies and 1 softcopy.

SUBMISSION FORMAT

National Energy and Green
Technology Awards 2018

CATEGORY: GREEN BUILDING

CERTIFICATION AND COVERING NOTE

Sample:

The *(name of building)* occupies a site area of about _____ square meters and was completed in _____. (Following is a brief description of the building, say). The building has 2 basements and 9-storeys (5 storey H-shaped ward tower block above the 4-storey podium block) with a total gross floor area of _____ square meters.

The details of client and project consultants (as appropriate) are:

Client : *(Name of Building)*
 Architect :
 M&E Engineers :
 C&S Engineers :
 Project Managers :

ITEM	DATA	COMPLIANCE (PUT CHECK)
Submission Requirement		
- Certification and covering note from consultants	1 page	
- Cover of Report	1 page	
- Energy Efficiency (active and passive designs)	Max 4 pages	
- Renewable Energy	Max 2 pages	
- Water Efficiency	1 page	
- Environmental Sustainability (Materials, Greenery, Sustainable Site, etc)	Max 2 pages	
- Indoor Environmental Quality	Max 3 pages	
- Operation and Maintenance & Other Green features, and Innovation	Max 3 pages	
- Building Information	Max 4 pages	
- Drawings (in A4 / A3 size): Typical floor plan, site layout, roof plan and vertical cross section, etc	Max 4 pages	
Pre-Qualification		
- Maximum Energy Efficiency Index of Occupied Air-conditioned Area: Office: 160 kWh/m ² /yr; Library: 160 kWh/ m ² /yr; Retail/Shopping Malls: 192 kWh/ m ² /yr; Hotels: 216 kWh/ m ² /yr; Hospital: 288 kWh/m ² /yr (Normalised to 2,000 hours)	___ kWh/m ² /yr	
- Temperature and Other Settings: Not less than 21°C but not more than 26°C; RH: max 70% (applies to air-conditioning. Not pre-requisite - Higher score for having RH control system (below 65%).		
- Lighting Load: Office - Max 12 watts/m ² ; Others - Max 20 watts/m ²	___ watts/m ² (GFA)	
- Minimum Operating hours/yr: 2,000 hours/year		
- At least 1 full-year of operation prior to nomination in national competition	___ years	
Type of Font: Times Roman 12		

The **(name of building)** hereby agreed to allow the NEGTA Board of Judges and other experts that are designated by the NEGTA committee to visit the building and verify the authenticity of the data. However, two weeks advance notice is required to allow for necessary arrangements. We also hereby agree that NEGTA organizing party can publish the whole submission in the NEGTA, Ministry of Energy, Green Technology and Water and Energy Commission publication and website, without any prior consent of the owner of the company.

We, the undersigned certified that the information given is true and accurate and prepared with the consent of the party/ies involved.

Name of the Client

Office, Position
 Tel, fax, e-mail

Name of Consultant

Office, Position
 Tel, fax, e-mail

Name of Consultant

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Name of Consultant

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COVER OF REPORT (1 PAGE)

- Name of building, photo, etc.

**ENERGY EFFICIENCY - ACTIVE & PASSIVE DESIGN
(MAX 4 PAGES) – [30%]**

1.0 Passive Design Concepts

- 1.1 Orientation of building, Artist Impression, OTTV, RTTV and façade design
- 1.2 Window to Wall Ratio _____%
- 1.3 i. U value of opaque wall element
ii. U value and SC value of fenestration, including shading elements of east and west facade
- 1.4 Overall heat transfer through building envelope
(1. Wall: _____ W/m²; 2. Roof: _____ W/m²)
- 1.5 Daylighting (the use of diffuse radiation in building: hall, atrium, corridor, parking, toilet, etc.)
- 1.6 Zoning for integrated lighting and daylighting
- 1.7 Natural Ventilation
- 1.8 Air-conditioned area over Gross Floor Area
- 1.9 Other passive design concepts, roof gardening.

2.0 Active Design Concepts

- 2.1 Air-conditioning system (selection, layout and plant system design): _____ kW/ton
_____ W/m²

Summary table:

Chiller Plant	Efficiency (kW/ton)
Chiller (A)	
Chilled water pump (B)	
Condenser water pump (C)	
Cooling tower (D)	
System efficiency (A + B + C + D)	

- 2.2 System efficiency of aircond plant including air side equipment: Include chillers, chilled water pumps, condenser water pumps, AHU, FCU and cooling tower.
 - i. Selection, layout and plant system design
- 2.3 Cooling load (W/m²) based on air-conditioned area
- 2.4 Heat Recovery (e.g. heat pump for hot water)
- 2.5 Lighting systems: _____ W/m²
- 2.6 Vertical transportation (e.g. energy efficient lift, escalators with motion sensor control, etc.)
- 2.7 Other active design concepts, please specify

RENEWABLE ENERGY (MAX 2 PAGES) – [5%]

1. Total renewable energy installed capacity and total energy generated (kWh) yearly
2. % replacement of total building energy consumption by renewable energy
3. Total investment and pay-back period
4. How much of total electricity can be saved (kWh) in a year?

WATER EFFICIENCY (MAX 1 PAGES) – [10%]

1. Use of water efficient fittings (e.g. flow rate of taps L/min, dual flush WCs, L/flush etc.)
2. Provision of water sub-metering and leak detection system
3. Use of non-potable water for irrigation
4. Use of water efficient irrigation system (e.g. drip irrigation with rain sensors)
5. Use of non-potable water for cooling tower and other purposes
6. Rainwater harvesting & percentage in reduction of potable water consumption
7. Water treatment / recycling capacity
8. Others, please specify

ENVIRONMENTAL SUSTAINABILITY (MAX 2 PAGES) – [25%]

1. Sustainable construction
 - a) Conservation of existing structures & material reuse
 - b) Use of materials / products with recycled content
 - c) Environmentally friendly products with green label certification
 - d) Good Environmental Management system during construction
2. Greenery
 - a) Restoration and Conservation of existing trees
 - b) Vertical greenery
 - c) Roof gardens
 - d) % landscape areas over total site area
3. Provision of recycling facilities
 - a) Storage, collection and disposal
4. Public transport accessibility
 - a) Distance from nearest bus stop/train station
5. Materials (Percentage of Using Local Materials)
6. Sustainable Site (external environment)
7. Barrier free and public access
8. Others, please specify

INDOOR ENVIRONMENTAL QUALITY (MAX 3 PAGES) – [20%]

1. Thermal comfort – design indoor temp and relative humidity
2. Number of Ventilation air per person (CFM/person)
3. Use of low volatile organic compound (VOC) paints and coatings
4. Use of VOC and low formaldehyde emission products (e.g. carpets)
5. Use of high frequency ballast to avoid low frequency flickering
6. Pollution (noise, vibration, EM wave, Dust, Bacterial count and CO₂ concentration sensing)
7. Environmental tobacco smoke (ETS) and smoke control
8. Lighting illumination
9. Others, please specify.

**OPERATION AND MAINTENANCE & OTHER GREEN FEATURES AND INNOVATION
(MAX 3 PAGES) – [10%]**

1. Any other feature with positive environmental impact
2. Bio-climatic architecture and design
3. Sustainable operation and maintenance
4. Management Policy
5. Buildings Standard of Operation (SOP)
6. As Build Drawing
7. Records, Logs & other documentation that able to show the improvement of Green Building Design
8. Performance Achievement
9. Cogeneration
10. Others, please specify

BUILDING INFORMATION (FILL UP DETAILS MAX 4 PAGES)

A. General Information

1. Name of the building
2. Name of owner and management company
3. Address
4. Tel. No./Fax No./E-mail address

B. Building Physical Information

5. Physical building background
 - Brief history
 - Single function usage or mix function usage (specify)
6. Age of building

7. Any retrofit done? When? What?
8. Total number of storeys
9. Total number of basement floor
10. Number of car park storeys
11. Total gross floor area
12. Surface area of the envelope including the roof to gross floor area ratio
13. Car park area
14. Gross lettable area
15. Air-conditioned area
16. Non-air conditioned area
17. Plot ratio (total GFA / ground area)

C. Building Design and Practice Information

18. Plants and landscape design/ wind and natural ventilation/ water features/ daylighting/ etc.
19. Facade and shading design
 - Type of façade
 - Colour of façade
 - Use of shading device
20. Location of service core
21. Shape of building
22. Overall heat transfer through building envelope:
Wall _____ W/m²; Roof _____ W/m²
23. Lighting fixtures
24. *Lighting load _____ W/m² (gross floor area)
25. Building air-conditioner system and equipment
 - Fresh air exchange rate: _____ m³/hour/person
 _____ m³/hour/m²
 _____ m³/hour
 - Energy efficiency of aircon chiller: _____ kW/ton
26. Cooling Load _____ W/m² (air-conditioned area)

D. Operation Information

27. Occupancy rate Minimum _____ % of total area
28. Total number of occupants
29. Ownership of building (occupied by owner(s), renter(s), etc.)
30. Building operating schedule
 - weekdays from _____ to _____
 - Saturday from _____ to _____
 - Sunday from _____ to _____
 - Operating hours/ yr _____

31. Building indoor environment: Indoor air quality setting: temperature and RH

E. Energy Consumption Information

32. Peak demand (monthly)

33. Energy used (monthly)

34. Typical Load curve (weekdays, weekends)

35. *Energy efficiency index: air-conditioned area _____ kWh/m²/yr (based on 2,000 operational hours/yr)

36. Energy consumption:

- Electricity _____ kWh/m²/yr (based on 2,000 operational hours/yr)
- Fuel _____ Liters/yr (not for electricity generation)

F. Energy Management Information

37. Building energy management system Connected physical points _____ (nos)

38. Energy saving:

- Schedule programme _____ kWh/yr
- Duty cycle programme _____ kWh/yr
- Optimum start / stop programme _____ kWh/yr
- Power demand programme _____ kW (mean)

G. Maintenance Information

39. Maintenance programme

- Manpower: _____ man-hr/yr
- Maintenance contractor
- Availability of energy management engineer
- Training of maintenance workers: _____ cumulative hours/yr.

DRAWINGS (A4/A3 SIZE: TYPICAL FLOOR PLAN, SITE LAYOUT, ROOF PLAN, AND VERTICAL CROSS SECTION - MAX 4 PAGES)

SUBMISSION FORMAT

National Energy and Green
Technology Awards 2018

CATEGORY: EE DESIGNED BUILDING

CERTIFICATION AND COVERING NOTE

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COVER OF REPORT (1 PAGE)

- Name of building, photo, etc.

OVERALL ON-SITE DESIGN (2 PAGES WRITE-UP) – [15%]

1. Use of vegetation, landscape and hardscape
 - Effective application of ground covering plant and large plant
 - The modification of landscape and topography
 - The use of hardscape materials
2. The use of water body
 - Effective application of water body: location, quantity, etc.
3. The use of wind
 - Effective application of wind: natural ventilation, stack ventilation, etc.
4. Other use of on-site natural environment
 - The use of night sky radiation
 - Others (specify)

ACTIVE DESIGN (DISCUSSION OF 4 FEATURES IN MAX 4 PAGES) – [25%]

1. Air-conditioning system (selection, layout and plant system design): _____ kW/ton
_____ W/m²

Chiller Plant	Efficiency (kW/ton)
Chiller (A)	
Chilled water pump (B)	
Condenser water pump (C)	
Cooling tower (D)	
System efficiency (A + B + C + D)	

2. Lighting systems: _____ W/m²
3. Other systems (transportation, etc.) _____ W/m²
4. Indoor air quality (thermal comfort, ventilation, _____ m³/hour/person, etc.)
5. Overall energy consumption per sq.m. of normal air-conditioned areas: _____ W/m²
6. Other active design concepts (specify)

PASSIVE DESIGN (DISCUSSION OF 4 FEATURES MAX 4 PAGES) – [25%]

1. Orientation and building design
 - The orientation of building
 - The shape of building (surface area to gross floor area ratio)
 - The location of service core
 - The position of entrances

- The hardscape around building
 - Spatial organisation for various functions etc.
2. Envelope design (material, shading, fenestration, etc.)
 - i. Material
 - Heat transfer protection
 - Humidity protection
 - MRT effect
 - Colour of envelope
 - Infiltration protection and control etc.
 - ii. Shading
 - Efficiency of shading devices
 - The use of natural shading devices
 - The use of shading from adjacent buildings etc.
 - iii. Fenestration
 - Fenestration design: location, nature and size of opening
 - Light to solar heat gain ratio (LT/SC) etc.
 3. Overall heat transfer through building envelope:
Wall _____ W/m²; Roof _____ W/m²
 4. Daylighting
 - The use of diffuse radiation in building: hall, atrium, corridor, parking, toilet, etc.
 - Zoning for integrated lighting and daylighting
 - Contrast ratio of brightness
 5. Natural Ventilation
 6. Other passive design concepts (specify)

**MAINTENANCE AND MANAGEMENT
(DISCUSSION OF 4 FEATURES MAX 4 PAGES) – [25%]**

1. Energy management systems
 - Building Energy Management System (BAS)
 - Energy consumption monitoring system etc.
2. Maintenance and management measures
 - Manpower: _____ man-hour/year
 - Maintenance contractor
 - Availability of energy management engineer
 - Training of maintenance workers: _____ cumulative no. of hours
3. Others (specify)

ENVIRONMENTAL IMPACTS
(GENERAL DISCUSSION MAX 1 PAGE) – [10%]

1. Waste management
2. Pollution management (air, noise, visual, exhaust, etc.)
3. Green/ non-toxic materials
4. Others (specify)

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- 32. Peak demand (monthly)
- 33. Energy used (monthly)
- 34. Typical Load curve (weekdays, weekends)
- 35. *Energy efficiency index: air-conditioned area _____ kWh/m²/yr (based on 2,000 operational hours/yr)
- 36. Energy consumption:
 - Electricity _____ kWh/m²/yr (based on 2,000 operational hours/yr)
 - Fuel _____ Liters/yr (not for electricity generation)

F. Energy Management Information

- 37. Building energy management system Connected physical points _____ (nos)
- 38. Energy saving:
 - Schedule programme _____ kWh/yr
 - Duty cycle programme _____ kWh/yr
 - Optimum start / stop programme _____ kWh/yr
 - Power demand programme _____ kW (mean)

G. Maintenance Information

- 39. Maintenance programme
 - Manpower: _____ man-hr/yr

- Maintenance contractor
- Availability of energy management engineer
- Training of maintenance workers: _____ cumulative hours/yr.

**DRAWINGS (A4/A3 SIZE: TYPICAL FLOOR PLAN, SITE LAYOUT, ROOF PLAN, AND
VERTICAL CROSS SECTION - MAX 4 PAGES)**

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CATEGORY: RETROFITTED BUILDING

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Pre-Qualification		
Data		
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- Temperature and Other Settings: Not less than 21°C but not more than 26°C; RH: max 70% (applies to air-conditioning. Not pre-requisite - Higher score for having RH control system (below 65%).		
- Lighting Load: Office - Max 12 watts/m ² ; Others - Max 20 watts/m ²	___ watts/m ² (GFA)	
- Minimum Operating hours/yr: 2,000 hours/year		
- At least 1 full-year of operation after retrofitting prior to nomination in national competition	___ years	
- Total Energy Savings: 20% of the total energy consumption for A/C retrofits; 10% of the total energy consumption for non-A/C retrofits		
Type of Font: Times Roman 12		

The (**name of building**) hereby agreed to allow NEGTA Board of Judges and other experts that are designated by the NEGTA committee to visit the building and verify the authenticity of the data. However, two weeks advance notice is required to allow for necessary arrangements. We also hereby agree that NEGTA organizing party can publish the whole submission in the NEGTA, Ministry of Energy, Green Technology and Water and Energy Commission publication and website, without any prior consent of the owner of the company. We, the undersigned certified that the information given is true and accurate and prepared with the consent of the party/ies involved.

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COVER OF REPORT (1 PAGE)

- Name of building, photo, etc.

TOTAL ENERGY SAVINGS (2 PAGES WRITE-UP) – [25%]

1. Air-conditioning system
2. Lighting systems
3. Others (specify)
 - More than 10% for non-A/C retrofits e.g. lamps, etc.
 - 20% - active retrofit such as A/C

ACTIVE DESIGN (DISCUSSION OF 4 FEATURES IN MAX 4 PAGES) – [25%]

1. Air-conditioning system (selection, layout and plant system design): _____ kW/ton
 _____ W/m²

Chiller Plant	Efficiency (kW/ton)
Chiller (A)	
Chilled water pump (B)	
Condenser water pump (C)	
Cooling tower (D)	
System efficiency (A + B + C + D)	

2. Lighting systems: _____ W/m²
3. Indoor air quality (thermal comfort, ventilation, _____ m³/hour/person, etc.)
4. Overall energy consumption per sq.m. of normal air-conditioned areas: _____ W/m²
5. Other active design concepts (specify)

PASSIVE DESIGN (DISCUSSION OF 4 FEATURES MAX 4 PAGES) – [15%]

1. Spatial organisation for various functions
2. Environmental improvement of surroundings
3. Envelope design (material, shading, fenestration, etc.)
 - i. Material
 - Heat transfer protection
 - Humidity protection
 - MRT effect
 - Colour of envelope (exterior)
 - Infiltration protection and control etc.
 - ii. Shading
 - Effectiveness of shading devices
 - The use of natural shading devices
 - The use of shading from adjacent buildings etc.

iii. Fenestration

- Fenestration design: location, nature, and size of opening
 - Light to solar heat gain ratio (LT/SC) etc.
4. Overall heat transfer through building envelope:
Wall _____ W/m²; Roof _____ W/m²
 5. Daylighting
 6. Others passive design concepts (specify)

**MAINTENANCE AND MANAGEMENT
(DISCUSSION OF 4 FEATURES MAX 4 PAGES) – [25%]**

1. Energy management systems
 - Building Energy Management System (BAS)
 - Energy consumption monitoring system etc.
2. Maintenance and management measures
 - Manpower: _____ man-hour/year
 - Maintenance contractor
 - Availability of energy management engineer
 - Training of maintenance workers: _____ cumulative no. of hours
3. Others (specify)

**ENVIRONMENTAL IMPACTS
(GENERAL DISCUSSION MAX 1 PAGE) – [10%]**

1. Waste management
2. Pollution management (air, noise, visual, exhaust, etc.)
3. Green/non-toxic materials
4. Others (specify)

BUILDING INFORMATION (FILL UP DETAILS MAX 4 PAGES)

A. General Information

1. Name of the building
2. Name of owner and management company
3. Address
4. Tel. No./Fax No./E-mail address

B. Building Physical Information

5. Physical building background
 - Brief history
 - Single function usage or mix function usage (specify)

- 6. Age of building
- 7. Any retrofit done? When? What?
- 8. Total number of storeys
- 9. Total number of basement floor
- 10. Number of car park storeys
- 11. Total gross floor area
- 12. Surface area of the envelope including the roof to gross floor area ratio
- 13. Car park area
- 14. Gross lettable area
- 15. Air-conditioned area
- 16. Non-air conditioned area
- 17. Plot ratio (total GFA / ground area)

C. Building Design and Practice Information

- 18. Plants and landscape design/ wind and natural ventilation/ water features/ daylighting/ etc.
- 19. Facade and shading design
 - Type of façade
 - Colour of façade
 - Use of shading device
- 20. Location of service core
- 21. Shape of building
- 22. Overall heat transfer through building envelope:
Wall _____ W/m²; Roof _____ W/m²
- 23. Lighting fixtures
- 24. *Lighting load _____ W/m² (gross floor area)
- 25. Building air-conditioner system and equipment
 - Fresh air exchange rate: _____ m³/hour/person
_____ m³/hour/m²
_____ m³/hour
 - Energy efficiency of aircon chiller: _____ kW/ton
- 26. Cooling Load _____ W/m² (air-conditioned area)

D. Operation Information

- 27. Occupancy rate: Minimum _____ % of total area
- 28. Total number of occupants
- 29. Ownership of building (occupied by owner(s), renter(s), etc.)
- 30. Building operating schedule
 - weekdays from _____ to _____
 - Saturday from _____ to _____
 - Sunday from _____ to _____

- Operating hours/ yr _____

31. Building indoor environment: Indoor air quality setting: temperature and RH

E. Energy Consumption Information

32. Peak demand (monthly)

33. Energy used (monthly)

34. Typical Load curve (weekdays, weekends)

35. *Energy efficiency index: air-conditioned area _____ kWh/m²/yr (based on 2,000 operational hours/yr)

36. Energy consumption:

- Electricity _____ kWh/m²/yr (based on 2,000 operational hours/yr)
- Fuel _____ Liters/yr (not for electricity generation)

F. Energy Management Information

37. Building energy management system Connected physical points _____ (nos)

38. Energy saving:

- Schedule programme _____ kWh/yr
- Duty cycle programme _____ kWh/yr
- Optimum start / stop programme _____ kWh/yr
- Power demand programme _____ kW (mean)

G. Maintenance Information

39. Maintenance programme

- Manpower: _____ man-hr/yr
- Maintenance contractor
- Availability of energy management engineer
- Training of maintenance workers: _____ cumulative hours/yr.

H. Environmental Impacts

40. Impacts of waste

41. Impacts of pollution (air, noise, visual, exhaust, etc.)

I. Additional Information for Retrofitted Buildings

42. *Energy savings in air-conditioned area _____ kWh/m²/yr (based on 2,000 operational hours/year)

43. *Energy savings in lighting systems _____ kWh/m²/yr (based on 2,000 operational hours/year)

44. *Retrofitted area: _____ % of total area

DRAWINGS (A4/A3 SIZE: TYPICAL FLOOR PLAN, SITE LAYOUT, ROOF PLAN, AND VERTICAL CROSS SECTION - MAX 4 PAGES)

SUBMISSION FORMAT

National Energy and Green
Technology Awards 2018

CATEGORY: TROPICAL BUILDING

CERTIFICATION AND COVERING NOTE

Sample:

The (*name of building*) occupies a site area of about _____ square meters and was completed in _____. (Following is a brief description of the building, say). The building has 2 basements and 9-storeys (5 storey H-shaped ward tower block above the 4-storey podium block) with a total gross floor area of _____ square meters.

The details of client and project consultants (as appropriate) are:

Client : (*Name of Building*)
 Architect :
 M&E Engineers :
 C&S Engineers :
 Project Managers :

ITEM	DATA	COMPLIANCE (PUT CHECK)
Submission Requirement		
- Certification and Note from Consultants	1 page	
- Cover of Report	1 page	
- Overall on-site design	Max 2 pages	
- Active Design	Max 4 pages	
- Passive Design	Max 4 pages	
- Maintenance and Management	Max 4 pages	
- Environmental Impacts	1 page	
- Building Information	Max 4 pages	
- Drawings	Max 4 pages	
Pre-Qualification		
Data		
- Maximum Energy Efficiency Index: (150 kWh/m ² /yr based on GFA) – Normalised to 2,000 hours	___ kWh/m ² /yr	
- GFA not less than 500m ² excluding car park area		
- Excludes religious building		
- Air-conditioning area less than 50% of total gross floor area (GFA)	___ %	
- Temperature and Other Settings: Not less than 21° C but not more than 26° C		
- Lighting load (Office – max 12 W/m ² of GFA; Others – max 20 W/m ² of GFA)	___ W/m ² (GFA)	
- Minimum Operating hours/yr.: To be based on 2,000 hours/year		
- At least 1 full-year of operation prior to nomination in national competition	___ years	
Type of Font: Times Roman 12		

The (**name of building**) hereby agreed to allow the NEGTA Board of Judges and other experts that are designated by the NEGTA committee to visit the building and verify the authenticity of the data. However, two weeks advance notice is required to allow for necessary arrangements. We also hereby agree that NEGTA organizing party can publish the whole submission in the NEGTA, Ministry of Energy, Green Technology and Water and Energy Commission publication and website, without any prior consent of the owner of the company.

We, the undersigned certified that the information given is true and accurate and prepared with the consent of the party/ies involved.

Name of the Client

Office, Position
 Tel, fax, e-mail

Name of Consultant

Office, Position
 Tel, fax, e-mail

Name of Consultant

Office, Position
 Tel, fax, e-mail

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 Tel, fax, e-mail

COVER OF REPORT (1 PAGE)

- Name of building, photo, etc.

OVERALL ON-SITE DESIGN (2 PAGES WRITE-UP) – [20%]

1. Use of vegetation, landscape and hardscape
 - Effective application of ground covering plant and large plant
 - The modification of landscape and topography
 - The use of hardscape materials
2. The use of water body
 - Effective application of water body: location, quantity, etc.
3. The use of wind
 - Effective application of wind: natural ventilation, stack ventilation, etc.
4. Other use of on-site natural environment
 - The use of night sky radiation
 - Others (specify)

ACTIVE DESIGN (DISCUSSION OF 4 FEATURES IN MAX 4 PAGES) – [15%]

1. Air-conditioning system (selection, layout and plant system design): _____ kW/ton
_____ W/m²
2. Lighting systems: _____ W/m²
3. Other systems (transportation, etc.) _____ W/m²
4. Indoor air quality (thermal comfort, ventilation, _____ m³/hour/person, etc.)
5. Overall energy consumption per sq.m. of normal air-conditioned areas: _____ W/m²
6. Other active design concepts (specify)

PASSIVE DESIGN (DISCUSSION OF 4 FEATURES MAX 4 PAGES) – [40%]

1. Orientation and building design
 - The orientation of building
 - The shape of building (surface area to gross floor area ratio)
 - The location of service core
 - The position of entrances
 - The hardscape around building
 - Spatial organisation for various functions etc.
2. Envelope design (material, shading, fenestration, etc.)
 - i. Material
 - Heat transfer protection

- Humidity protection
 - MRT effect
 - Colour of envelope
 - Infiltration protection and control etc.
- ii. Shading
- Efficiency of shading devices
 - The use of natural shading devices
 - The use of shading from adjacent buildings etc.
- iii. Fenestration
- Fenestration design: location, nature and size of opening
 - Light to solar heat gain ratio (LT/SC) etc.
3. Overall heat transfer through building envelope:
Wall _____ W/m²; Roof _____ W/m²
4. Daylighting
- The use of diffuse radiation in building: hall, atrium, corridor, parking, toilet, etc.
 - Zoning for integrated lighting and daylighting
 - Contrast ratio of brightness
5. Natural Ventilation
6. Other passive design concepts (specify)

**MAINTENANCE AND MANAGEMENT
(DISCUSSION OF 4 FEATURES MAX 4 PAGES) – [15%]**

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