

Form GMIS-2: Submission Form for Energy Modeling For Green Mark Incentive Scheme (Validation After Project Completion)	
Research & Innovation Department Building & Construction Authority 5 Maxwell Road #16-00 Tower Block, MND Complex Singapore 069110	INSTRUCTIONS: (1) Please refer to the Explanatory Notes attached before completing the form. (2) Use a separate set of forms for each building. (3) *Delete accordingly
Project Ref. No.: _____ Description of Building / Building Works: _____ _____ _____ _____ *Lot / Plot _____ *TS / MK _____ Address / Road : _____ _____	
(1) As the Qualified Persons responsible for the design of M&E services for the above mentioned project, we declare that: <ol style="list-style-type: none"> a. the energy modeling conducted for the project is in accordance with the requirements of BCA's Framework for Energy Modeling for Green Mark Incentive Scheme and b. based on the results of the energy modeling, the building's actual energy consumption is ____% lower than that of the revised Reference Model. 	
(2) We attach the following documentations to support the above declaration: <ol style="list-style-type: none"> a. Summary of Space and ETTV of the Building Envelope (<i>required if there is change</i>) (Form GMIS 2.1) b. Summary of Actual Consumption of Energy by End Use including Efficiency Indicators (Form GMIS-2.2) c. Summary printout from energy modeling software for the revised Reference Model (required if there is change in space use, scheduling or occupancy). 	
Name, Address, Email and Tel of M&E Consultancy Firm for the project	(1) Name & Signature of Qualified Person (Mechanical PE) (2) Name & Signature of Qualified Person (Electrical PE)

FORM GMIS-2.1: Summary of Space and ETTV of the Building Envelope
(required if there is a change)

(A) Space Summary			
Building Use	Air-Conditioned Area (m2)	Non Air-Conditioned Area (m2)	Total Area (m2)
1. Office			
2. Toilets			
3. Storage			
4. Corridor			
5. Atrium			
6. Foodcourt			
7. Mechanical / Electrical			
8. Staircase			
9. Conference			
10. Retail Outlets			
11. Carpark			
12. Others			
Total			
Note: The building use floor areas for both the Reference and Actual Building must be the same.			

(B) Building Envelope Summary - ETTV			
Orientation of Façade	Gross Area of External Walls (m ²)	Reference Model ETTV (W/m ²)	Actual Building ETTV (W/m ²)
North			
North-East			
East			
South-East			
South			
South-West			
West			
North-West			
Average ETTV of the Building Envelope (W/m²)		50 W/m ²	

FORM GMIS-2.2: Summary of Actual Consumption of Energy by End Use including Efficiency Indicators

End Use	Reference Model Energy Consumption (kWh)	Actual Building Energy Consumption (kWh)	Tolerance (%)
Lighting – (Air-Conditioned Space)			
Lighting- (Non Air-Conditioned Space)			
¹ Air-Conditioned Plant			
² Air System Fans			
Mechanical Ventilation Fans			
Lifts			
Escalators			
Receptacle Equipment			
Domestic Water Systems			
Others			
Total Building Energy Consumption			

Renewable Energy Sources

End Use	Energy Produced (kWh)	Reference Model Energy Consumption (kWh)	Actual Building Energy Consumption (kWh)	Tolerance (%)
Photovoltaics				
Others				
Total Building Energy Consumption including Renewable Energy Sources				

Efficiency Indicators

Efficiency Indicators	Reference Model	Actual Building
Energy Efficiency Index, EEI (kWh/m ² /yr)		
System Efficiency of Air-Conditioned Plant (kW/kW)		

¹ Chilled Water System (chillers, water pumps and cooling towers)

² Chilled water Air Handling and Fan Coil units

EXPLANATORY NOTES FOR APPENDIX D – SUBMISSION FORM FOR ENERGY MODELING FOR GREEN MARK INCENTIVE SCHEME (Validation After Project Completion)

To facilitate verification of the declared energy consumption, the submission forms shall be accompanied by the following:-

- (a) The detailed computation of the ETTV values for the Actual Building and revised Reference Model using APPENDICES 1 to 4 of “ETTV CALCULATION FORMAT IN RESPECT OF AN AIRCONDITIONED BUILDING” (*required if there is a change*).
- (b) Certification of the simulation program is tested in accordance to the ASHRAE Standard 140.
- (c) The input data of the simulation program for the revised Reference Model shall include:
 1. Space input data for all zones comprising detail information on construction materials and their properties designed for each individual zone. For example, room area, walls, windows, doors, floors, partitions, sensible and latent loads (lightings, occupancy rates, receptacles loads, Outdoor ventilation rates, misc loads etc).
 2. Schedules for each individual operating zone (eg. lighting, occupants, mechanical fans, AHUs, other mechanical and electrical equipment, etc.)

Note:

1. The developer shall furnish a softcopy of the executable input data file(s) used in the generation of the energy estimates for the Proposed and Reference models.
 2. The developer shall produce detailed shop drawings and other necessary information which is necessary for the comprehensive evaluation of the energy modeling before awarding the Green Mark Incentive Scheme, as and when requested by BCA.
- (d) The output data of the simulation program for the revised Reference Model shall include:
 1. Monthly energy consumption by Mechanical and Electrical system components (eg. Air-Conditioned Systems, Lighting Systems, Receptacle Equipment, Lifts, Escalators, etc).
 - (e) The FORM GMIS-2 shall be signed by the Qualified Persons (both Mechanical and Electrical Professional Engineers) for the project.