

GREEN MARK ENERGY EFFICINECY ANALYSIS REPORT

AAA Building Redevelopment

200 Braddell Road Singapore
579700

Phone: 6730 4435
Email: admin@sleb.sg



SLEB
SMART HUB

Report Date	
Report Reference Number	
Green Mark Reference Number	

Purpose of the Report

This report estimates the energy efficiency level of the target building and compares it to that of the reference model based on BCA Green Mark standards.

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1. Project Details

Project Name	
Postal Code	
Address	
Gross Floor Area (m ²)	
Project Status	
Photo	

2. Green Mark Application Details

Green Mark Version	
Green Mark Reference Number	

3. Building Details

Number of Buildings in Project	
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Building #1

Building Name		
Building Type		
Mixed-Development Use Types		
	Office Building Floor Area (m ²)	
	Retail Building Floor Area (m ²)	

Building #2

Building Name		
Building Type		
Mixed-Development Use Types		
	Office Building Floor Area (m ²)	
	Retail Building Floor Area (m ²)	

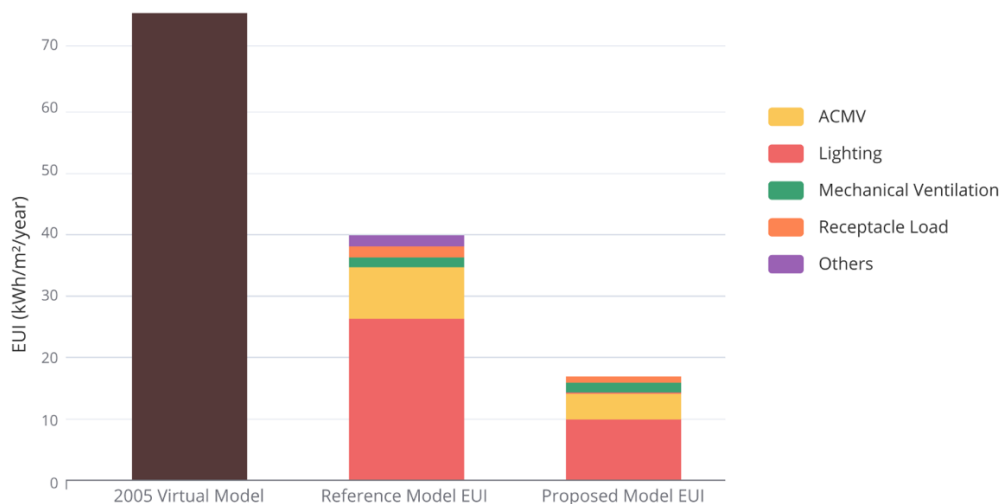
Summary

The proposed model achieves nett EUI of 80 kWh/m²/year. It saves 40% energy compared to Green Mark 2015 standard, and saves 60% energy consumption compared to the 2005 code compliant building. Hence, the energy efficiency of the project has met Green Mark Platinum SLE (Green Mark rating) requirements.

Energy Consumption, EUI and Energy Savings

	2005 Code Compliant Building	Reference Model	Proposed Model
Total Energy Consumption (kWh)	4,526,000	3,277,625	2,148,383
EUI (kWh/m ² /year)	226.3	163.9	107.4
Percentage of Energy Savings	52.50%	34.50%	-
Renewable Energy Generated or Used (kWh/year)	-	-	127,750
Nett Energy Consumption (kWh/year)	4,526,000	3,277,625	2,020,633
Nett EUI (kWh/m ² /year)	226.3	163.9	101
Percentage of Energy Savings Including Renewable Energy	55.40%	38.40%	-

EUI Benchmark



Energy Consumption Breakdown

	Reference Model Energy Consumption (kWh)	Proposed Model Energy Consumption (kWh)	Energy Savings (%)
ACMV	#####	#####	
Lighting	#####	#####	
Mechanical Ventilation	#####	#####	
Receptacle Load*	#####	#####	
Others	#####	#####	
Total Building Energy Consumption	#####	#####	

*capped at 25% of total energy consumption for reference model

Performance Metrics Under Pathway 2

Parameter	Proposed Model
ETTV	50
Non-AC Areas	20.00%
ACMV TSE (kW/RT)	1
Air Side Efficiency (kW/RT) (DCS)	
ACMV (Unitary)	Three phases - 3 ticks; Single phase - 3 ticks
Lighting Power Budget (W/m ²)	5
Mechanical Ventilation (W/CMH)	0.2
Integrated Energy Management & Control Systems	MOE Energy Management System ACMV Demand Control Energy Consumption Monitoring and Benchmarking System Lighting Demand Control Energy Recovery System
On-Site Renewable (kWh/year)	127,750

Building Information

Building Name	
Address	
Postal Code	
Gross Floor Area (m ²)	
Number of Storeys	
Year of TOP/CSC	
Operation Schedule (hr/week)	
Building Type	
If Other, Please Specify	

Details of Mixed-Use Development Use Type

Building Use Type	
Operation Schedule of Specified Building Use (hr/week)	
Storeys Occupied in Building	
Floor Area (m ²)	
Floor Area of Data Centre/ Server Room (m ²)	
F&B Area (m ²)	
Supermarket Area (m ²)	

Envelope and Façade

	Reference Model	Proposed Model
Envelope Thermal Transfer Value (W/m ²)		
Percentage of Naturally Ventilated Area Converted From AC Area (%)		

ACMV

	Reference Model	Proposed Model
Air Conditioning System Type		
Percentage of Air-Conditioned Area (%)		
Chiller Efficiency (kW/RT)		
Chilled Water Pump Efficiency (kW/m ³ /s)		
Condensing Water Pump Efficiency (kW/m ³ /s)		
Cooling Tower Efficiency (L/s/kW)		
Air Conditioning System Optimisation		
Air Distribution System Type		
Average Air Distribution System Fan Power		
Air Distribution System Efficiency (kW/RT)		
Average Air Distribution System Fan Efficiency (W/CMH)		
Percentage of Cooled Area Applying Demand Control (%)		
Fresh Air Intake Rate (L/s/m ²)		

Lighting

	Reference Model	Proposed Model
Lighting Power Density (W/m ³)		
Percentage of Lighted Area Applying Demand Control (%)		

Mechanical Ventilation

	Reference Model	Proposed Model
Total Mechanical Ventilation Rate (CMH)		
Average Mechanical Ventilation Fan Efficiency (W/CMH)		
Mechanically Ventilated Carpark Area (m ²)		
Percentage of Demand Control Using CO Sensor at Carpark (%)		
Other Mechanically Ventilated Areas (m ²)		
Percentage of Demand Control Using Occupancy Sensor (%)		

Others

	Reference Model	Proposed Model
Receptacle Load Density (W/m ²)		
Hot Water Usage Per Week (m ³)		
Hot Water Supply Temperature (°C)		
Hot Water System COP		
Lift Total Rated Power (kW)		
Lift With Regenerative Features		
Escalator Total Rated Power (kW)		
Escalator With Sleep Mode Features		
Other Systems Energy Consumption (kWh/year)		
Energy Consumption Monitoring and Benchmarking System		
Renewable Energy Capacity (kWp)		

Report Sign-Off

Name	Role in project	Signature & Date