

BCA

Building

Energy

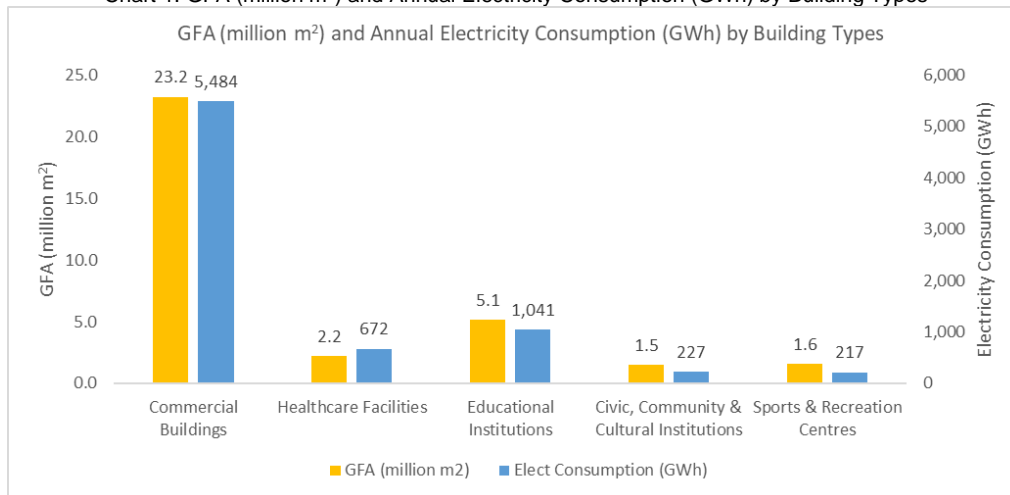
Benchmarking Report

(Statistics and Figures) 2023

Overview of Submitted Buildings

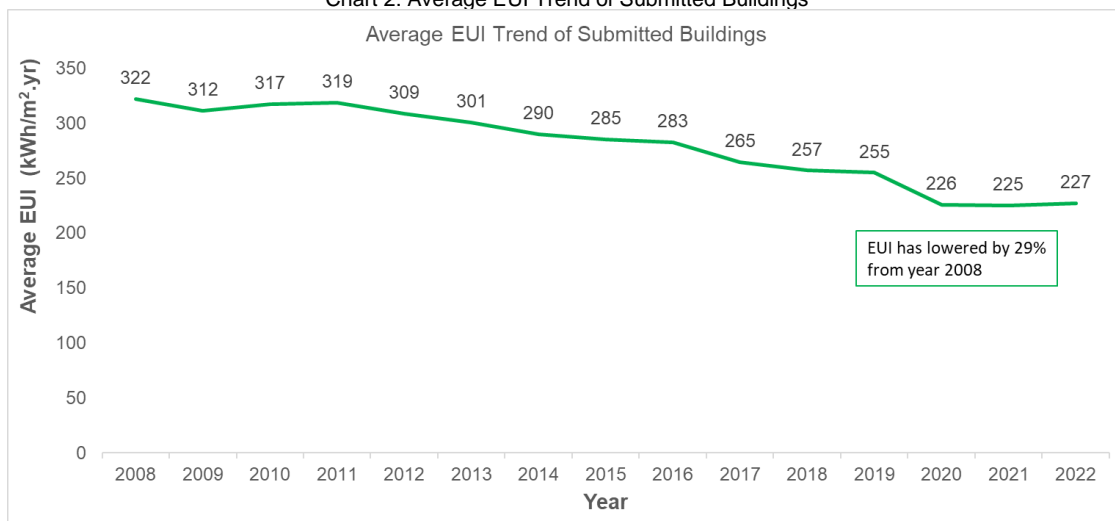
A total of 1,058 buildings (91% of targeted buildings), equivalent to a combined GFA of 33.6 million m² and total annual electricity consumption of 7,641 GWh (from January to December 2022) were analysed.

Chart 1: GFA (million m²) and Annual Electricity Consumption (GWh) by Building Types



The overall EUI for the submitted buildings has lowered by 29% compared to 2008.

Chart 2: Average EUI Trend of Submitted Buildings



Building Energy Benchmarks¹

Building Energy Benchmarks for Commercial Buildings

Table 1: Building Energy Benchmarks for Commercial Buildings (Electricity Consumption in 2022)

Building Function	Size*	No. of Buildings (in 2022)	Average EUI (kWh/m ² .yr)	EUI of Top 10%	EUI Ranges (kWh/m ² .yr)			
					Top Quartile (1% - 25%)	2nd Quartile (26% - 50%)	3rd Quartile (51% - 75%)	Bottom Quartile (76% - 100%)
Office Buildings	Large	186	216	≤94	≤122	122 - 160	160 - 206	>206
	Medium	122	210	≤79	≤109	109 - 155	155 - 215	>215
Hotels	All	92	230	≤162	≤199	199 - 232	232 - 284	>284
Retail Buildings	Large	76	275	≤121	≤189	189 - 367	367 - 472	>472
	Medium	41	377	≤189	≤243	243 - 331	331 - 480	>480
Mixed Developments	All	46	227	≤126	≤180	180 - 226	226 - 259	>259

*All: Hotels and Mixed Developments of GFA ≥5,000 m²;

*Large: Office Buildings and Retail Buildings of GFA ≥15,000 m²;

*Medium: Office Buildings and Retail Buildings of GFA <5,000 m² and <15,000 m².

Building Energy Benchmarks for Non-Commercial Buildings

Table 2: Building Energy Benchmarks for Non-Commercial Buildings (Electricity Consumption in 2022)

Building Type	Building Function	No. of Buildings (in 2022)	Average EUI (kWh/m ² .yr)
Healthcare Facilities	Hospitals	14	357
	Specialist Clinics	9	371
	Polyclinics/ Private Clinics	7	164
	Community Hospitals/ Nursing Homes	41	110
Educational Institutions	Universities	12	187
	Polytechnics/ ITE Campuses	10	95
	Private Colleges/ Private Schools	18	98
Civic, Community and Cultural Institutions	Civic Institutions	12	218
	Community Institutions	36	93
	Cultural Institutions	6	162
Sports and Recreation Centres	Sports Complexes	10	155
	Recreation Centres	47	141

¹ The building benchmarks cover buildings with a GFA of at least 5,000 m² and with centralised or unitary cooling systems. Newly constructed or retrofitted buildings were excluded from the benchmarks, and developments with shared electricity consumption or centralised air-conditioning systems were aggregated.

Glossary

Average Energy Use Intensity (EUI)	Weighted average of the energy use intensities of buildings is calculated based on electricity consumed using gross floor area as the weightage factor.
Energy Use Intensity (EUI)	Measures the total energy consumed in a building in a year, expressed as kilowatt hour (kWh) per gross floor area (m ²).
Gross Floor Area (GFA)	All covered floor areas of a building, except otherwise exempted, and uncovered areas for commercial uses, are deemed the gross floor area of the building. Generally, car parks are excluded from gross floor area computation.
Building Types	<p>Office building is a development with premises used as a place of business and for conducting administrative work.</p> <p>Hotel is a development used for accommodation purposes on a commercial basis. The predominant use of this development shall be hotel rooms.</p> <p>Retail building is a development with premises primarily used for any trade or business where its primary purpose is the sale of goods or foodstuff by retail or provision of services.</p> <p>Mixed development is a combination of any of the above three commercial building types.</p> <p>Healthcare facility is a development used mainly for medical services, such as hospitals, medical centres, community health centres, nursing homes, clinics (including dental clinics), and clinical laboratories (including x-ray laboratories).</p> <p>Educational institution comprises tertiary and private institutions. Tertiary institution is a facility space used for post-secondary education, such as Institute of Technical Education (ITE), Polytechnic and University. Private institution is a privately owned and funded facility/space used for education.</p> <p>Civic, community and cultural institution consists of civic, community or cultural facilities. Civic facilities include police station, fire station and prison. Community facilities are mainly community centre/club, and places of worship. Cultural facilities comprise performing arts centre, library, museum, and concert halls.</p> <p>Sports and recreation centre is a development to be used mainly for sports and recreational purpose, such as sports complex, swimming complex and recreation club.</p>

BCA Building Energy Benchmarking Report 2023

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