

Summary

The Building and Construction Authority (BCA) Green Mark is primarily a building assessment scheme to promote sustainability in the built environment, designed for a tropical climate. However, the assessment scheme extends beyond buildings to other infrastructure projects.

Certifying body: Building & Construction Authority of Singapore (BCA)

Applicable sectors					Award types				
General civil	Transport only	Buildings	Public realm	Community / precinct	Design	As built	Operation	Planning	Other

Country	Singapore	Sustainability criteria	Example criteria and weightings: Infrastructure: 1. Landscape, ecology and land efficiency (20 points (pts)) 2a. Energy (20 pts) 2b. Renewable energy (10 pts) 3. Water (15 pts) 4. Project management (20 pts) 5. Waste management and environmental protection (15 pts) 6. Innovation (30 pts) New non-residential buildings: 1. Energy efficiency (116 pts) 2. Water efficiency (17 pts) 3. Environmental protection (42 pts) 4. Indoor environmental quality (8 pts) 5. Other green features (7 pts). There are 190 pts in total. The minimum requirement for category 1 is 30 pts, minimum requirements for other categories combined is 20 pts.
Deployment & developments	Launched in 2005 to support the development of more environmentally-friendly buildings. There are now various assessment schemes for residential and non-residential developments, both existing and new. There are special tools for specific developments, such as restaurants, supermarkets, interiors, schools and retail. There are also schemes for infrastructure projects (e.g. barrages, roads, bridges), parks and district projects. In total, there are 16 schemes available. As of 1 Jul 2013, there are more than 1,600 building projects associated with the scheme.		
Applicants	Developers, building owners and government agencies.		
Government endorsement	The scheme was developed and administrated by BCA, a statutory board under the Ministry of National Development. It is also endorsed by other government agencies such as National Environment Agency. For Green Mark for building schemes, BCA has put in place various promotional initiatives, including a cash incentive to encourage adoption: "Green Mark Incentive Scheme". This scheme, worth \$20,000,000 for new buildings and \$100,000,000 for existing buildings, was fully committed by early 2013. In Singapore, the Green Mark certified level is a mandatory requirement for all new buildings with a GFA larger than 2000 sqm. For Public Sector buildings, higher Green Mark ratings are required for both new and existing buildings. For selected key developmental zones, government land sale building projects are required to achieve a Green Mark rating. However, these mandates are not extended to cover infrastructure projects.	Assessment: scoring, performance levels, evidence collection	BCA Green Mark Infrastructure: Certified (50 to <70), Gold (70 to <80), Goldplus (80 to <90), Platinum (90 and above). A similar rating system is used for other schemes, but the points criteria to achieve the rating changes. For example, a minimum 100 pts is required to achieve Green Mark Platinum for Districts. A typical scheme needs 75 points to achieve Gold and 85 points to achieve GoldPlus. Documentation evidence needs to provide detailed information of design and construction of the project, including engineering calculation and material/equipment specifications. Other information (such as purchase/delivery orders) is needed at verification stage. Assessors go onsite for a detailed assessment. The process includes a half day pre-assessment, two days for final assessment and one day for verification (stage 1 and if necessary stage 2).
			Tailoring

Support to applicants	<p>There are documents available outlining how to achieve points, but they do not provide references or extra guidance. The detail provided varies across the different tools. An online points calculator is provided for some of the schemes. References and links to relevant codes are provided under "publications" on the website.</p>	Fee	<p>There are a range of assessment fees depending on the scheme and the size of the project. Some indicative examples are:</p> <ul style="list-style-type: none"> - From \$1,940 for a single unit landed house to \$15,750 for up to 300 units (larger projects determined case by case). - A small restaurant assessment is \$2,750. - A small new building fee is \$12,080 (recertification is \$3,030), an extra large new building fee is \$26,130 (recertification is \$6,050). <p>As of 12 December 2012 (Singapore dollar).</p>
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Case study

Project name: Marina Barrage

Location: Singapore

Proponent: PUB Singapore

Award: Platinum, awarded in 2008

Brief project description:

The Barrage serves three purposes: It creates a freshwater lake to boost Singapore's water supply; acts as a tidal barrier to prevent flooding in low-lying city areas; and keeps the water level consistent, offering a venue for water-based activities in the heart of the city.

Green Features:

- Energy savings of 1,102 MWh per year.
- Double-glazed glass panels used to reduce heat penetration and the need for air-conditioning.
- Less energy used as drainage pumps leverage on siphon effect, with energy savings of 105 MWh per year.
- The 70 kW peak DC Solar Park houses Singapore's largest collection of solar panels in operation.
- Generates about 50% of the daytime electricity needed for indoor lighting and power points.
- Automated irrigation sprinkler system on the rooftop is linked to rain sensors.
- Water efficient fixtures such as taps and waterless urinals manage water consumption effectively.
- Rocks and stones collected during the construction stage were re-used as building materials to cut down on carbon footprint.
- Segmental excavation significantly reduced the extent of sand excavation when constructing the Barrage Drainage Pumping Station.

View of the Marina Barrage

