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Two National University of Singapore projects – the Engineering Design and Innovation Centre (above) and the Frontier – have attained the Green Mark Platinum (Zero Energy) certification under the Green Mark 2021 scheme. Both harness renewable energy through solar panels and are designed to maximise natural ventilation and daylight, while using sun-shading devices and extensive greenery to bring temperatures down. ST PHOTO: CHONG JUN LIANG

Buildings to meet higher standards to be certified green

Revised BCA Green Mark comes as S'pore pushes to be low-carbon built environment

Michelle Ng

New and existing buildings will now have to hit higher sustainability standards to be certified green, with the reduction of embodied carbon in developments as one of the criteria emphasised.

The changes to the Building and Construction Authority (BCA) Green Mark scheme come as Singapore pushes towards its target to become a low-carbon built environment.

The refreshed scheme places greater emphasis, among other criteria, on the integration of smart technologies, the creation of healthier environments for building users and the reduction of embodied carbon in developments, said National Development Minister Desmond Lee yesterday.

Embodied carbon refers to the carbon or energy consumed through the production of materials used for construction and during the construction process itself.

The refreshed scheme was launched at the virtual International Built Environment Week 2021 event, which runs till Friday.

In his opening address, Mr Lee said there is a need to continually raise standards for sustainability in buildings, in order to hit key targets set in the Singapore Green Plan 2030. "Over the years, we have reviewed and refined the scheme to ensure that we consistently raise the bar for our best-in-class standards, and to broaden the scope for sustainability in our built environment," he said.

Under the BCA Green Mark 2021, new and existing buildings will need to meet higher minimum energy efficiency levels and score sufficient points in the sustainability sections to be certified green.

This will also be applicable to buildings that have been certified Green Mark in the past.

In Singapore's push for more super-low-energy developments, residential buildings that achieve at least 60 per cent improvement in energy efficiency compared with 2005 levels will also be recognised, said Mr Lee.

Launched in 2005, the BCA Green Mark certification scheme is a rating system that evaluates a building's environmental impact and performance.

In his speech, Mr Lee said a one-stop digital platform to streamline the submission process to relevant government agencies is also in the works. The roll-out of the platform is part of wider efforts to accelerate the transformation of the built environment sector, which has been badly hit by the Covid-19 pandemic.

Called Corenet X, it is slated to be launched in the second half of 2023. "The end goal is an efficient, faster and easier-to-navigate regulatory approval process that will benefit both industry practitioners and our regulatory agencies," said Mr Lee.

He also highlighted two projects by the National University of Singapore – the four-storey Engineering Design and Innovation Centre and the Frontier, a two-storey building that houses two canteens. Both have attained the Green Mark Platinum (Zero Energy) certification under the Green Mark 2021 scheme.

Mr Lee noted that both projects harness renewable energy through solar panels and are designed to maximise natural ventilation and daylight, while using sun-shading devices and extensive greenery to bring temperatures down.

Frontier, in particular, has demonstrated exemplary performance in climate resilience by putting in place food waste processes to generate reusable resources, such as using biodiesel from recycled cooking oil to power vehicles in the campus, he said.

In a discussion at the event hosted by Ms Jessica Cheam, founder and managing director of Eco-Business, Mr Lee said it will take more than just legislation and contractual commitments for the sector to weather "black swan" events like the Covid-19 pandemic.

"It's the collaborative mindset that allows developers, main contractors and the rest of the ecosystem to have that relationship to support each other beyond what is written in black and white," he said.

When asked what he imagines Singapore's built environment will look like in the future, Mr Lee said: "I'll push to be a City in Nature."

"This requires the built environment stakeholders to not just build more sustainably, but also be stewards of the environment, people, biodiversity, heritage, enterprises and communities in and around the projects we work on.

"This ensures that Singapore can be both an urban hub – which is very exciting, but also very homely in how we take care of our most vulnerable, our environment and nature – and being guardians of our memories for future generations."

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Criteria for assessing buildings

The revised BCA Green Mark 2021 certification scheme will raise energy efficiency requirements and environmental sustainability standards for new and existing buildings.

Buildings will be assessed on the following criteria:

1 INTELLIGENCE
This refers to the use of integrated digital technologies and data management, and whether these systems enable fully automated, intelligent and responsive buildings.

2 HEALTH AND WELL-BEING
This covers the way buildings are designed, retrofitted, constructed and operated to facilitate the mental, physical and social well-being of their occupants.

3 WHOLE LIFE CARBON
This takes into account embodied carbon emissions, use of sustainable construction methods, and the fitting out of the building. The plans, and delivery of those plans, to have the building transition towards zero carbon emissions are also evaluated.

4 MAINTAINABILITY
The strategies and smart facilities management technologies that are used to optimise labour efficiency and cost-effectiveness of the building's downstream maintenance regimes.

5 RESILIENCE
This refers to the building's resilience and adaptability to climate change, and the use of nature-based or natural climate solutions to protect, manage or restore ecosystems.