Cool new way to help transform Tampines into eco-town by 2025

Seven buildings, including malls, will save energy by using a shared cooling system

Michelle Ng

Owners of seven buildings in Tampines Central are giving high energy bills the cold shoulder by coming together to tap a centralised cooling system.

The project by Temasek and SP Group is one of the efforts to transform Tampines into an eco-town by 2025, in line with the Singapore Green Plan 2030.

The buildings are Tampines Mall, Telepark, Century Square, Tampines 1, OCBC Tampines Centre Two, Our Tampines Hub and UOB Tampines Centre.

Chilled water pipes, among other infrastructure, will be retrofitted and installed in these buildings so they can share the cooling load to provide air-conditioning, said Temasek and SP Group yesterday.

This leads to greater system efficiency through economies of scale, compared with standalone cooling systems, they added.

Minister for Social and Family Development Masagos Zulkifli said the project will complement existing green initiatives, such as solar panels on Housing Board rooftops, noting that the eco-town push can only be complete if businesses and commercial partners share the same vision.

"Apart from being a residential estate, Tampines is also an active and mature business hub – home to an industrial park, several office complexes and a cluster of shopping malls and Our Tampines Hub," said Mr Masagos, who is also an MP for Tampines GRC.

He was speaking at an event yesterday at Our Tampines Hub, where representatives from building owners CapitaLand, Frasers Property, OCBC Bank, People's Association and UOB signed a letter of intent with SP to affirm their interest in subscribing to the cooling system.

"As we looked to target high-impact areas for sustainability that we could potentially intervene in, one problem emerged quite evidently – the issue of cooling in buildings," he added.

He noted that commercial buildings tend to consume a significant amount of energy through the use of air-conditioning.

The seven participating buildings were involved in a white paper that studied the feasibility of such a cooling system.

The study of 14 existing buildings in Tampines Central found that the cooling system would reduce energy consumption by 17 per cent, enough to power 1,665 three-room HDB flats for a year. It could also curb carbon emissions by 18 per cent each year – the equivalent of removing 2,250 cars from roads annually.

Building owners would save $4.3 million annually from energy savings, the reduction in equipment replacement and maintenance costs, and potential earnings from freed-up chiller plant space which can be converted for retail or office use.

The study by Temasek and SP started in the first quarter of last year, supported by the Ministry of Sustainability and the Environment and Tampines GRC.

Discussions with the owners of the other seven buildings are ongoing.

Tampines was picked over Choa Chua Kang and Nee Soon, the two other shortlisted towns, for the pilot. Tampines was selected as it was deemed to have a good mix and a concentration of retail malls, offices and community hubs in close proximity, which is ideal for the implementation of a district cooling system.

Building owners will bear the cost of setting up the system in their buildings. SP and Temasek declined to reveal the rates.

Mr Masagos noted that introducing the system in a brownfield development comes with its own set of challenges, although it could pave the way for future towns to follow suit.

He said: "It's very difficult to introduce solutions into a mature and established development like Tampines Central, even if there are new technologies.

"But this issue is not unique to Tampines (as) brownfield developments represent 80 per cent to 90 per cent of our urban landscape in Singapore. If we succeed in Tampines, it becomes a blueprint at the national level."

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Centralised system to reduce energy consumption and costs

A DISTRICT COOLING SYSTEM

Imagine a giant air-conditioner that can cool an entire district of buildings, rather than just individual buildings – but greener and more energy-efficient. How does it work?

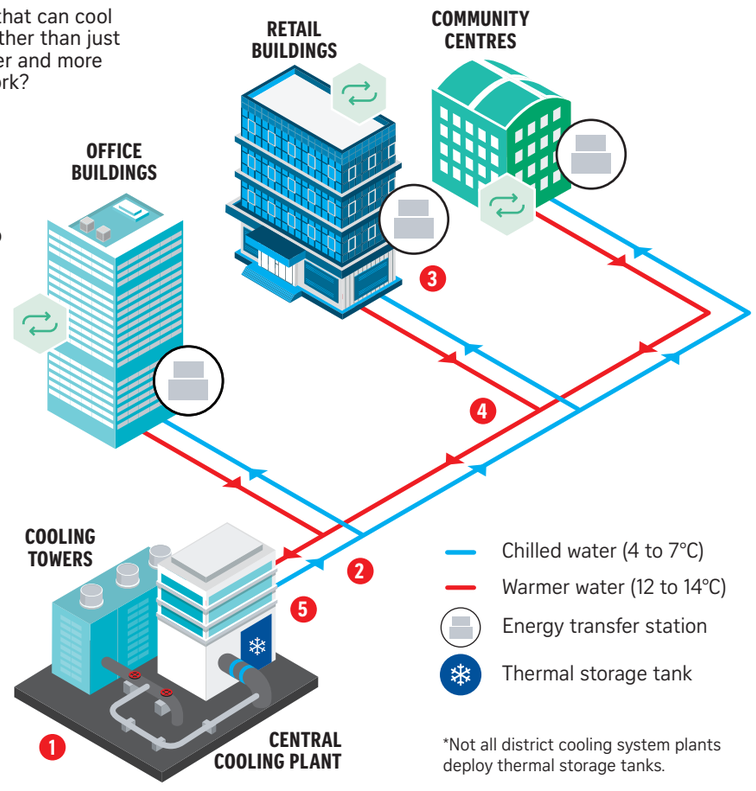
1 Chilled water is generated in a central cooling plant.

2 A closed-loop network of underground insulated pipes distributes the chilled water to each building.

3 When the chilled water reaches the building, energy transfer stations within each building circulate the cold energy from the network into the building's air-conditioning system, which dehumidifies and cools the air.

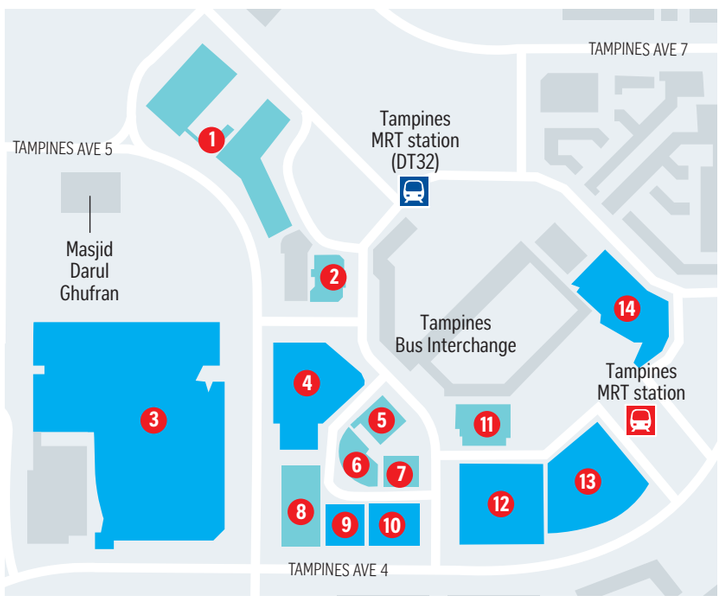
4 The warmer water is then circulated to the cooling plant, via the return pipes, to be chilled again. The whole process repeats.

5 Thermal storage tanks (if used*), are designed to store cold energy, in the form of ice or chilled water. Thermal storage tanks help to regulate cooling demand and provide resilience.



*Not all district cooling system plants deploy thermal storage tanks.

14 BUILDINGS IN TAMPINES CENTRAL IDENTIFIED FOR PILOT



1 7 & 9 Tampines Grande
2 OCBC Tampines Centre One
3 Our Tampines Hub
4 Telepark
5 Tampines Plaza 2
6 Income at Tampines Point
7 Tampines Plaza 1
8 Income at Tampines Junction
9 OCBC Tampines Centre Two
10 UOB Tampines Centre
11 CPF Tampines Building
12 Century Square
13 Tampines Mall
14 Tampines 1

Buildings set to be part of the district cooling system

Source: TEMASEK, SP GROUP STRAITS TIMES GRAPHICS

SHARING THE COOLING LOAD

The buildings that will use the centralised system are:

- Tampines Mall
- Telepark
- Century Square
- Tampines 1
- OCBC Tampines Centre Two
- Our Tampines Hub
- UOB Tampines Centre

Tampines was chosen for the pilot as it was deemed to have a good mix of malls, offices and community hubs in close proximity. BERITA HARIAN FILE PHOTO