

ANNEX B

Carbon Zero Grand Challenge Fact Sheet

About the Challenge

The Carbon Zero Grand Challenge will be launched on 19 October 2021. The Grand Challenge will seek to incentivize innovative solutions that can help PUB, Singapore's national water agency, achieve net-zero emissions and scale to other water facilities around the globe. PUB is seeking carbon capture, utilisation, removal, and other solutions at any technology readiness level that can be integrated with its operations and reach commercial scale within a decade or sooner.

Background

As an island city-state, Singapore's geography inherently limits its access to natural resources. For this reason, Singapore has always been an innovator and a leader in identifying clean, efficient, and cost-effective solutions for energy, water, and the environment.

As the national water agency, PUB manages Singapore water supply, water catchment, and used water in an integrated way. In 2020, PUB also took on the responsibility of protecting Singapore's coastline from sea-level rise as the national coastal protection agency.

The global water sector contributes approximately 5% of greenhouse gas (GHG) emissions but has not yet received significant attention in climate debates. Although Singapore's local water sector emissions represent less than 1.5% of the city-state's total emissions, in today's climate, every effort to reduce carbon emission contributes toward the fight against climate change.

The Sixth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) that was published in August 2021, reinforced the reality that urgent and aggressive action is needed to keep global temperature rise below 2°C, as committed to in the Paris Agreement. Every sector must play its role, including the water sector. That is why PUB has set a goal to achieve net zero carbon emissions.

PUB is already working to reduce its carbon footprint by replacing carbon-based energy sources with solar PV systems deployed on facility rooftops and at reservoirs, and reducing carbon emissions through energy efficiency, lowering desalination energy and conservation. These efforts are expected to abate approximately 600 kilotons CO₂e/year of emissions by mid-century.

While ongoing efforts are able to reduce PUB's future carbon footprint substantially, it is seeking solutions to remove an additional 400 kilotons CO₂e/year associated with its facilities that will require carbon capture, utilization and removal solutions.

The Carbon Zero Grand Challenge seeks to focus the attention of innovators, investors, and thought leaders on water sector emissions in order to accelerate the deployment of innovative solutions to address Singapore's net zero carbon emission goals and scale to water facilities around the globe.

Grand Challenge Structure and Timeline

The Grand Challenge will have two phases of competition and a pilot-scale demonstration over approximately 45 months. In the Proposal Phase, solvers will submit a detailed proposal

addressing net carbon abated, cost, and other critical aspects of their solution. Up to six proposals will be awarded S\$250,000 each to develop a Proof of Concept. In the Proof of Concept Phase, solvers will showcase how their ideas or solution could be integrated within PUB's operations through a desktop simulation and/or lab-scale study and develop a detailed design for a pilot project. Up to two proposals will then be awarded S\$2.5 million each to demonstrate a ~1 kiloton-scale version of their solution at a PUB facility in Singapore.

The total prize purse will be S\$6.5 million (approximately US\$4.8 million).

The Grand Challenge will last a total of approximately 45 months, including approximately 21 months for the first two phases of competition and 24 months for the pilot project. Proposals for the Carbon Zero Grand Challenge will be open from 19 October 2021 till 24 February 2022.

Interested parties can log on to <https://www.herox.com/PUBCarbonZero> for more information.

TABLE 2.
Grand Challenge Expected Timeline

Description	Duration	Date(s)
Grand Challenge opens; Proposal Phase commences	--	October 19, 2021
Solvers register and develop submissions	4 months	October – February 2022
Proposal Phase registration deadline and submission deadline	--	February 24, 2022
Proposal Phase evaluation	3 months	March – May 2022
Proposal Phase awards announced	--	June 2022
Proof of Concept Phase commences; Solvers selected to participate in this phase develop proof-of-concept submissions	9 months	June 2022 to March 2023
Proof of Concept Phase submission deadline	--	March 2023
Proof of Concept Phase evaluation	3 months	Q1/Q2 2023
Proof of Concept Phase awards announced	--	Q3 2023
Pilot Project, including 6-12 months of operation	24 months	Q3 2023 – Q3 2025

END