Challenge Theme	Low Carbon Solutions
Statement Number	02
Launch Date	9 January 2026

<table>
<tr><td>Title</td><td>Decarbonizing Backup Power: Innovative Solutions to Eliminate Diesel Generator Use in Critical Services</td></tr>
<tr><td>Background</td><td>The building is equipped with a diesel generator to provide backup power to essential services such as fire protection systems, emergency lights, and fireman lifts during emergencies. Every month, the generator is powered on for testing to ensure functionality, which results in the consumption of diesel and contributes to Scope 1 emissions under the GHG protocol.

The team is committed to reducing its carbon footprint and improving sustainability, with a focus on decarbonizing its operational processes. The current dependency on diesel-powered backup systems for critical safety services creates a challenge in meeting sustainability goals. The need is to maintain operational resilience while transitioning to a more environmentally friendly, low-carbon alternative.</td></tr>
<tr><td>Challenge</td><td>The industry is challenged to develop a solution that:
Can replace or optimize the monthly generator testing process to maintain the reliability of essential services, or
Can provide a backup power solution that meets authority requirements without using diesel generators for essential services in emergencies.
Is cost-effective, scalable, and reliable, ensuring that safety and compliance requirements for critical systems are met while mitigating Scope 1 emissions.</td></tr>
<tr><td>Desired Outcomes</td><td>Low Carbon Solutions: At least 50% reduction in Scope 1 emissions by minimising the need for diesel consumption in backup power generation.</td></tr>
<tr><td>Requirements</td><td>Resilience and Reliability: The solution must maintain the same level of backup power availability, reliability, and performance of safety-critical services.

1. The solution should eliminate or significantly reduce the use of diesel fuel for backup power generation.
2. The solution should ensure uninterrupted power supply to critical systems (e.g., fire protection systems, emergency lighting, fireman lifts) during emergencies or testing, while maintaining full compliance with safety standards.
3. The solution should be scalable and adaptable for buildings of similar size, complexity, and critical service requirements, ensuring functionality across diverse setup.
4. The solution should achieve near-zero Scope 1 emissions or demonstrate a substantial reduction compared to the current diesel backup system.
5. The solution must maintain the same level of backup power availability, reliability, and performance of safety-critical services, while meeting authority requirements</td></tr>
<tr><td>Possible Solutions</td><td>The ideal solution could be a hybrid backup power system (e.g., battery storage, on-site renewable generation and powered systems) that can be used for testing and backup purposes without using diesel. Alternatively, an innovative approach to system testing that eliminates diesel consumption (such as remote diagnostics, digital testing methods, or energy storage systems with long life cycles) could be considered.</td></tr>
<tr><td>Development Timeframe</td><td><table><tr><th>Step</th><th>Task</th><th>Start</th><th>End</th></tr></table></td></tr>
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	1	Feasibility assessment and engineering design	T_o	T_o + 2 months
	2	Authority clearance	T_o + 2 months	T_o + 7 months
	3	Performance verification	T_o + 7 months	T_o + 12 months
Testbed/ Trial site (envisioned deployment site)	To be confirmed			
Additional Info				