DECAL 2.0 Briefing

26 January 2026

Please scan for more detailed info

Challenge 2: Low Carbon Solutions – Decarbonizing Backup Power: Innovative Solutions to Eliminate Diesel Generator Use in Critical Services

Background

Monthly testing of diesel generators for essential services (fire protection, emergency lighting, Lift) results in diesel consumption and contributes to Scope 1 emissions. The challenge is to find a low-carbon alternative without compromising operational resilience or safety.

Desired Outcomes

Achieve at least a 50% reduction (ideally near-zero) in Scope 1 emissions by:

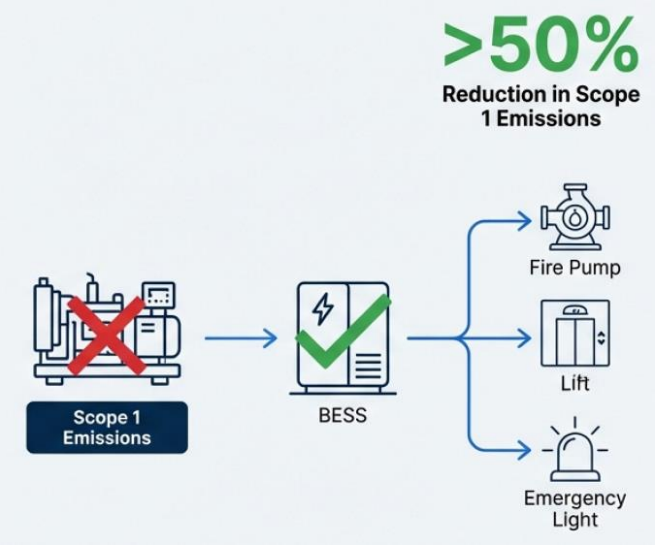
- Eliminating or significantly reducing diesel fuel use
- Maintaining 100% of the availability, reliability, and performance for safety-critical services.

Key Requirements

- Scalable and adaptable across buildings of similar complexity
- Must ensure uninterrupted power to critical systems.
- Maintain current backup power standards for safety-critical services

Test Sites

KB-1 - **(2 Feb 2026 (Mon, 10am)**



Please scan for Challenge Statement 2 detail

Points to note

- This challenges statement is not looking for efficient diesel generators.
- The solution should comply with the latest authorities requirements (e.g. SCDF, BCA etc).
- The solution/proposal should include a proof of concept.
- The diesel generators have a fuel capacity of 700L and is able to operate up to 4 to 8 hours.
- The diesel consumption for maintenance alone over the past year has been 120 liters for two generators, which costs approximately $315.

Sungei Kadut Eco-District

Thank you.

Technology Readiness Level (TRL)

TRL	Description	Definition
0	Idea	Unproven concept, no testing has been performed
1	Basic Research	Basic principles postulated and observed but no experimental proof available
2	Applied Research	Concept and application have been formulated
3	Critical Function	First Laboratory test completed; proof of concept
4	Concept Validation	Small Scale Prototype built in a laboratory environment; technology validated in laboratory
5	Validation of Integrated System	Component and/or validation in a relevant environment
6	Verification of Integrated System	System model or prototype tested in intended environment close to expected performance
7	Demonstration System	Operating in operational environment at pre-commercial scale
8	System Completed and Qualified	Manufacturing issues solved
9	Full commercial application	Technology available for consumers