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This report presents the findings of a feasibility study of an Energy Storage for Rarotonga. The report was developed by DNV KEMA for Te Aponga Uira (TAU) to assess the need and feasibility for storage for the Island of Rarotonga under selected future generation scenarios. The Cook Islands enjoyed a high level of electrification. However, the energy supply has been heavily dependent on imported fossil fuels, exposing the Cook Islands to the risks of energy security and international oil price volatility. The project phase"s main objective is to gain experience with wind power on Bonaire and reduce short-term electricity generation costs.

Renewable energy in the Cook Islands is primarily provided by solar energy and biomass. Since 2011 the Cook Islands has embarked on a programme of renewable energy development to improve its energy security and reduce greenhouse gas emissions,[1] with an initial goal of reaching 50% renewable electricity by 2015, and 100% by 2020.[2] The programme has been assisted by the governments of Japan, Australia, and New Zealand, and the Asian Development Bank.[2][3]

In 2014 construction began on the 960 kW Te Mana O Te Ra solar farm at Rarotonga International Airport.[8] The solar farm was commissioned in October 2014.[9] In September 2022 three battery-electric storage systems with a combined capacity of 13 MWh were installed on Rarotonga.[10]

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Te Aponga Uira (TAU) power station"s official opening of its new battery energy storage system (BESS). 22090101

The commissioning of these assets is part of the CookIslands Renewable Energy Project to reach its goal of delivering renewableenergy to all its islands and reducing the nation"s dependency on fossil fuelsby constructing solar-powered plants.

Designed to enable a reduction in the number of dieselgenerators operating, TAU"s BESS system will also provide grid stabilityfunctions such as frequency support and voltage support in the event of rapidchanges in solar PV output or faults in the network for the island"s power station.

Te Aponga Uira"s 6MW/3MW system uses Rolls RoyceSolutions MTU Energy Packs (Samsung batteries and Danfoss inverters), and the systemwill support the operation of the grid so it remains robust even withadditional high levels of renewable energy.

Installed by New Zealand-based company VectorPowersmart Ltd, the battery system was completed last

month and the system was openedby the chairman of the TAU Board, Mata Nooroa, and Asian Development Bank (ADB)executive director, Arif Baharudin.

The Airport West BESS system is located on thenorthern side of the airport; the purpose of its design is to alleviateconstraint on new solar PV installations to the grid.

This BESS system sits adjacent to the existing 1MW PVplant to store all the PV plant output during the day for release in theevening, which will relieve pressure on the stability of the grid permittingcompletion of additional solar PV installations.

The capacity 1MW/4MWh system was installed byAustralian company Mpower using LG Chem batteries and Ingeteam inverters.

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