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WHY ENERGY MANAGEMENT SYSTEMS AND BATTERY ENERGY STORAGE SOLUTIONS ARE CRITICAL TO DELIVERING RENEWABLE ENERGY IN THE PACIFIC?

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NIUE RENEWABLE ENERGY PROJECT:

THE OBJECTIVES.

- Improving network power stability
- Improving reliability – decreasing SAIFI/SAIDI
- Increasing use of solar generation
- Reducing diesel consumption

The Government of Niue released its Strategic Energy Roadmap in 2015 with a renewable energy target of 80% by 2025.



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NIUE RENEWABLE ENERGY PROJECT:

START POINT: WHAT EXISTING INFRASTRUCTURE?

- Solar Arrays: 540 kW across 8 locations
- PowerStation central control room
- 4 x 500 kVA diesel generators

*Success of the project would be dependent on
the integration of new infrastructure
with existing infrastructure*



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WHAT WAS DONE?



NIUE RENEWABLE ENERGY PROJECT:

SOLAR TO INCREASE RENEWABLE GENERATION

Increase solar generation by 600 kW towards the 80% RE goal

- Installed by the hospital in higher grounds as a more resilient location



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NIUE RENEWABLE ENERGY PROJECT:

BATTERIES TO STORE RENEWABLE ENERGY

Solar curtailment an obstacle to achieving the 80% RE goal due to lack of an effective energy storage system

- Li-Ion technology lends itself to applications where rapid charge/discharge is required
- Crucial for grid stability during cloud cover by allowing diesel generators to perform at constant load



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NIUE RENEWABLE ENERGY PROJECT:

EMS CENTRAL TO PROJECT SUCCESS

PowerSmart's Energy Management System:

- Controls diesel generators (on/off)
- Assesses electricity generated by solar
- Assesses energy stored in BESS and what actions to take

Central brain talking with existing and new infrastructure and balancing the energy flow between solar, diesel generators and BESS



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NIUE RENEWABLE ENERGY PROJECT:

RESULT: LINKING NEW WITH EXISTING IS POSSIBLE?

- Total Solar: 1.1 MW
- Total BESS: 3 MWh
- KEY TO SUCCESS: ENERGY MANAGEMENT
 - ✓ Increased use of solar electricity
 - ✓ Reduced diesel consumption

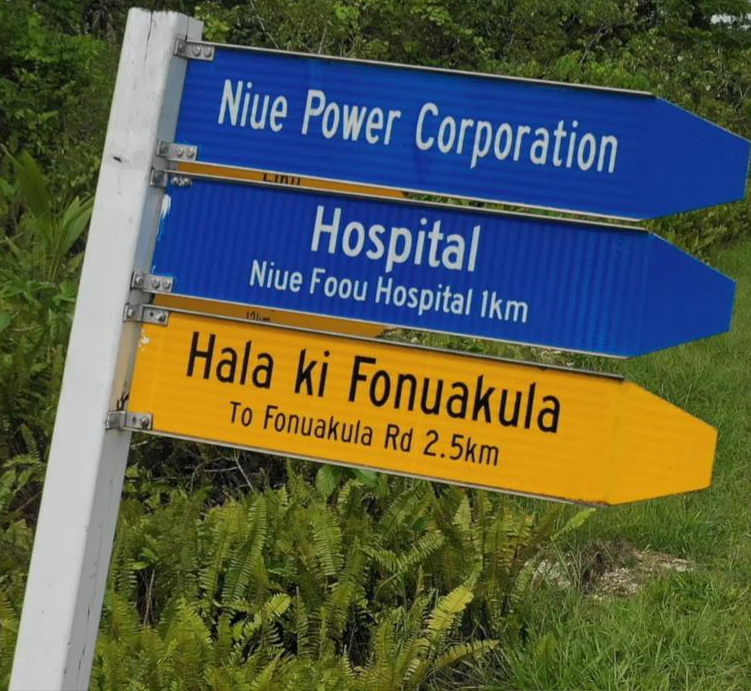


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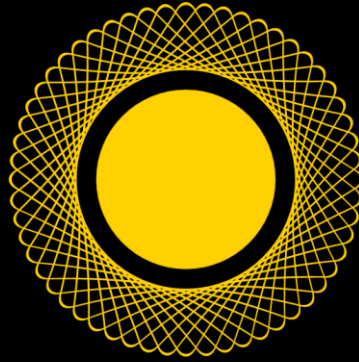


POWERSMART:

NIUE: RENEWABLE ENERGY PROJECT



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Thanks to our partners in the Niue Renewable Energy Project:

- New Zealand Aid Programme
- Government of Niue