



**A PACIFIC POWER ASSOCIATION PUBLICATION**

VOLUME 26 ISSUE 4 - December 2018





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**Head office: Ground Floor,  
Naibati House, Goodenough Street,  
Suva, Fiji Islands**

**Mailing Address: Private Mail Bag,  
Suva, Fiji Islands.**

**Telephone: (679) 3306 022**

**Email: [ppa@ppa.org.fj](mailto:ppa@ppa.org.fj)**

**[www.ppa.org.fj](http://www.ppa.org.fj)**

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Pacific Power Association, Suva Fiji Islands. The PPA is an inter-governmental agency and member of the Council of Regional Organisations in the Pacific (CROP) established to promote the direct cooperation of the Pacific Island Power Utilities in technical training, exchange of information, sharing of senior management and engineering expertise and other activities of benefit to the members.

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Reena Suliana  
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**Correspondence should be addressed to:**  
The Pacific Power Association, Private Mail Bag,  
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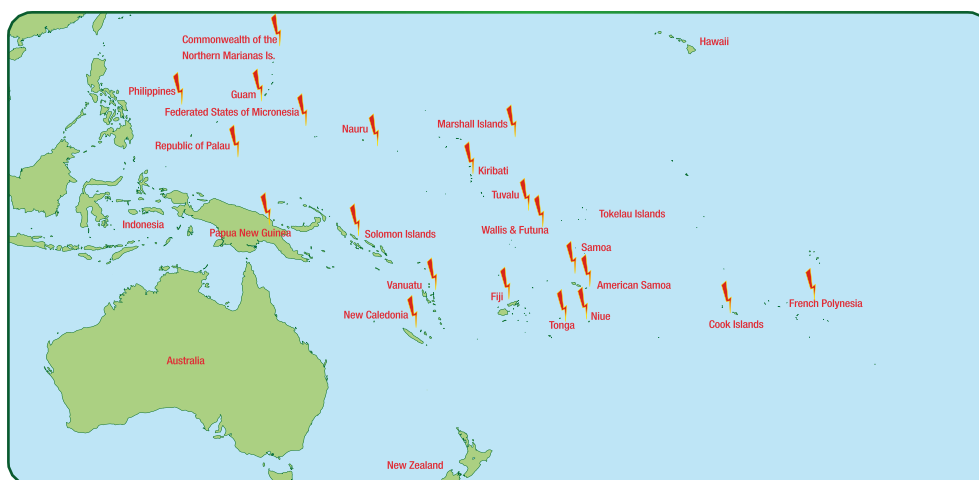
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Cover Page Photograph – "Te Aponga Uira's (TAU) 6.3MWh BESS at the Rarotonga Airport"

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## Editor's Notes

**Andrew D. Daka**  
Executive Director

Season's Greetings.

As we usher 2018 out and welcome the New Year, let us take time to reflect on our performance and see where we have done well, what did not meet our expectations and where we can learn from our mistakes and improve on our deliverables.

The Pacific Power Association has made progress this year particularly in the implementation of the World Bank financed Sustainable Energy Industry Development Project (SEIDP). The activities under Component 2: Technical Assistance and Component 3: Project Implementation Support have now either been completed or advanced in terms of the implementation. The procurement of Renewable Energy Resource Mapping consultant under Component 1 will conclude shortly as contract negotiations are well advanced and a contract to be signed early in 2019. This activity, however, has slipped in terms of the implementation schedule.

The PPA Secretariat continues to strive to make improvements in serving its members and looks towards a brighter 2019.

The articles in this issue complete the series of papers presented at the 27th Annual Conference in Palau on the theme "Renewables are Our Future".

We read about Tonga Power Ltd.'s plans to achieve its target of reaching 50% electricity generation from renewable energy by 2050. The article examines the likely energy outcomes, the current status of its energy mix, the plan of action, Tonga's renewable energy roadmap and financial impacts on achieving the goals. It must be noted that Tonga is the first of the Pacific Island countries to develop an Energy Roadmap and I am sure that other countries would be eager to learn from their experience.

We also read about Vergnet's experience in renewable energy integrations. Its most recent

work in Yap State, FSM, with the Yap State Public Utilities Corporation (YSPSC) involves integration various wind, solar, diesel components with communications to tie all the equipment together.

This is the festive time of the year with Christmas and New Year coming up shortly. However, in our region it is also the cyclone or the typhoon season and we need not be reminded of the preparations required for utilities to deal with any likely impacts of such occurrences.

The Conference of Parties (COP) 24 is currently in progress in Katowice, Poland, as we go to print and the outcomes will impact greatly on what is likely to take place in the region in addressing climate change. The region can only hope that the right decisions are made for the betterment of its people.

We welcome to the PPA family **Power Protection Industries** which is based in Brisbane, Australia, as its newest member.

Note that the dates for the 28th Annual Conference in Rarotonga, Cook Islands, have been announced and registrations are now open. All the details can be found on the Association's website <http://www.ppa.org.fj>.

The PPA Secretariat wishes to thank all the Members for their support of the Association and looks forward to that continuing in the future.

May I on behalf of the Board and the Secretariat of the Association wish all Members, their Staff and families a Merry Christmas and Happy New Year 2019.

Vinaka

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## Tonga Renewable Energy Road Map – Achieving 50% of electricity generation from Renewable Energy Sources by 2020

Setitaia Chen  
 CEO - Tonga Power Limited Ltd

### ABSTRACT

TPL was established in July 2008, a State Owned Enterprise 100% owned by the Government of Tonga and operated through the Ministry of Public Enterprises. Tonga Power's core business is generating, distributing and retailing electric power across our four-grid system within Tonga consisting of more than 23,000 active customers. A uniform tariff rate is charged for all electricity consumers. The fuel component of the tariff is adjusted regularly for forecast fuel costs, forecast electricity demand as well as to return previously over- or under- recovered fuel costs. The non-fuel part of the tariff is adjusted for inflation over the tariff period using a consumer price index. In 2010, the Government embarked on an ambitious pathway called the Tonga Energy Road Map (TERM) - A ten year road map to reduce Tonga's Vulnerability to Oil Price Shocks in 2008 and achieve an Increase in Quality Access to Modern Energy Services in an Environmentally Sustainable Manner thus setting TPL's goal of becoming 50% Renewable by 2020.

In line with the theme of the 2018 PPA Annual Conference "**Renewables are our Future**", this paper presents Tonga Power's current RE penetration, where we aim to be by 2020 and the renewable energy objective over the remaining time leading towards 2020.

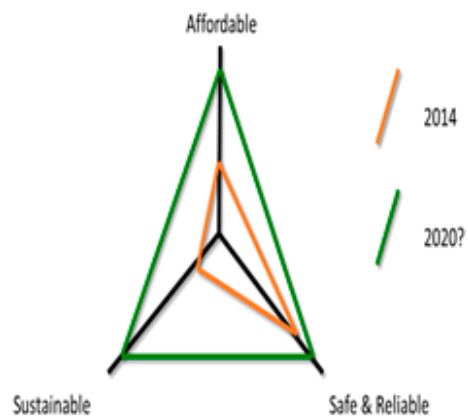
### Introduction

To deliver the nations core purpose of providing electricity to all customers in Tonga, TPL's strategic and business plans have been structured under a Concessions Contract with the Electricity Commission of providing Safe, Reliable, Sustainable and Affordable Power Services to the people of Tonga. Although TPL provides an essential service to the country, it must be financially sustainable and to this end, it must be as profitable and efficient as comparable businesses that are not state owned. The Tonga Energy Road Map (TERM) have established the Companies renewable pathway pf becoming 50% renewable by 2020

The Energy outcomes are as follows to ensure:

- National security of supply of energy
- Economic development- competitive energy pricing

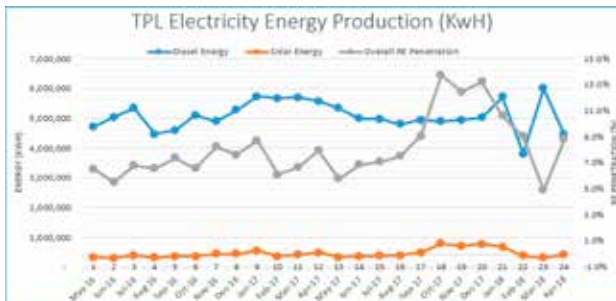
- Standard of Living- energy price, quality, services
- Low carbon energy system (50% RE)



### Tonga's Renewable Energy Penetration

- Consistently between 7% and 11%.
- Best month achieved is 14%-16%.
- Diesel Generation RE absorption limit reached (4.3MW)
- 17.7 MW of Diesel Capacity Installed.
- 6.2 MW of RE Installed On-grid (Solar PV, Wind, IPP)
- Largest RE Site commissioned in October 2017 was the 2MW Matatoa Solar Farm (IPP)

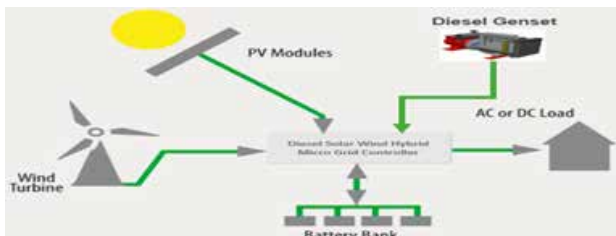
- 1.8 MW / 1.6 MWh Total BESS Installed



\*RE Increase in Oct-17 due to 2MW IPP & Sudden decrease in Feb-18 due to TC Gita

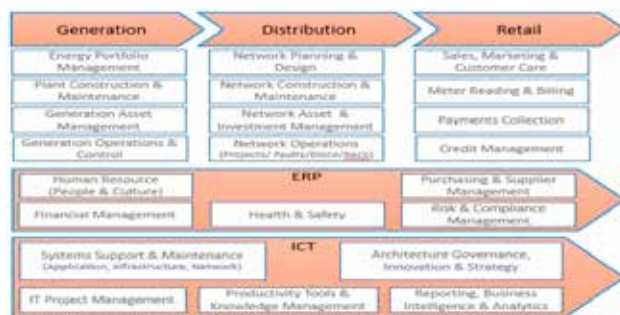
**Where do we want to be?**

- **Specifically** – 17.5 MW of RE and 10MW/20MWh Energy Storage added to the Tongatapu system.
- **Measure** – 50% or more of electricity generation from RE.
- **Achievable** – Through significant donor and private sector investment and a dedicated implementation team.
- **Relative** – Socio-economic benefits through tariff stability due to less impact of oil price shocks.
- **Time Bound** – before the end of 2020.



**How do we get there?**

A Total transformation of the Company starting from the foundational base through Enterprise Resource Planning, structured on a firm Information & Communication Technology System



**Green Climate Fund**

The Tonga Renewable Energy Project (TREP) is the final piece of the road map that will ensure Tonga

reaches it's 50% RE goal by 2020. TREP is broken into 7 components, however for the purpose of this paper, we will only discuss the first 3 components which are the main contributors to the 2020 goal.

Components	Base case		Variant	
	RE Capacity	BESS Capacity	RE Capacity	BESS Capacity
TPL Tongatapu				
1. Nukunono PV plant	0.7 MW	0.7 MWh	0.7 MW	0.7 MWh
2. Nukunono PV plant	0.7 MW	0.7 MWh	0.7 MW	0.7 MWh
3. Nukunono PV plant	0.7 MW	0.7 MWh	0.7 MW	0.7 MWh
4. Nukunono PV plant	0.7 MW	0.7 MWh	0.7 MW	0.7 MWh
5. Nukunono PV plant	0.7 MW	0.7 MWh	0.7 MW	0.7 MWh
6. Nukunono PV plant	0.7 MW	0.7 MWh	0.7 MW	0.7 MWh
7. Nukunono PV plant	0.7 MW	0.7 MWh	0.7 MW	0.7 MWh

**INDICATIVE FINANCING PLAN**

Source	RE Amount (\$ million)	%
Green Climate Fund Grant	20.00	55.3
Non-Development Bank Grant	12.20	33.0
Government of Australia Grant	1.20	4.7
Tonga Power Limited	1.00	2.8
Government of Tonga	1.00	2.8
Total	36.40	100.0

**Anticipated Impact of Reaching 50% Renewable Penetration by 2020**

Over its presumed 25 year life, generation from TREP will contribute:

- 427 GWh of renewable energy,
- save 110 Ml of diesel fuel, and 296 kT of carbon dioxide.
- Over its presumed 25 year life, including generation to be installed beyond TREP (that requires TREP as a pre-requisite), TREP will contribute 1,490 TWh of renewable energy, save 301 Ml of diesel fuel, and 808 kT of carbon dioxide.

Phase	TPL Grid				Non TPL-Grid Outer Islands		Total	%
	Tongatapu	‘Eua	Vava’u	Ha’apai	Islands			
Grand Total Conventional (MWh)	54,215,438	1,781,133	6,148,800	1,583,085	2,292,344	66,000,000	100%	
Conventional (MWh)	23,549,038	978,303	5,000,000	690,435	252,297	30,470,133	46%	
Phase 1								
TREP RE + BESS (MWh)		301,800		837,600	747,586	1,887,986	3%	
Exceeding RE + BESS (MWh)	4,000,000		710,000	16,000	350,946	5,276,946	8%	
Phase 2								
TREP RE + BESS including IPPs (MWh)	10,840,000				15,880	10,855,880	16%	
Phase 3								
TREP RE + BESS (MWh)	15,326,400	5,118,000	438,000		725,620	17,508,020	27%	
Total	30,466,400	832,800	1,148,000	853,640	2,040,947	35,829,887	54%	
RE Penetration (%) per Island	57%	87%	19%	53%	89%	54%		

**Tonga Renewable Energy Road Map**

TPL’s confidence in the energy road map over the remaining 2 years has been based on 2 separate consulting reports concluding to almost the same recommendation

OBJECTIVES	ARUP	ENTURA	LOCATION
Economic optimum level of RE (LCDE)	58%	54% (GCF Submission)	TBU
Level of RE (Combination of Solar & Wind)	20.1MW	17.5MW	TBU
Short Term Grid Integration Storage (BESS)	5MW/2.5MWhr	5MW/2.5MWhr	Popua Power Station
Long Term Load Shifting Storage (BESS)	5MW/17.5MWhr	5MW/17.4MWhr	Matatua
Network Modeling & Upgrade (Operating Parameters)	RE Grid Absorption – Switching – Protection	Control System (Microgrid Control) – Eastern Ring Feeder – Generation Settings – Synchronous Condenser at the Power Station (reactive power support to allow maximum power output from RE)	TBU

**The financial analysis proved viable whereby:**

- The financial internal rate of return for projects on Tongatapu has been



calculated to be 4.9% (pre-tax) compared to a weighted average cost of capital of 2.6%. For subprojects 4-7, the financial internal rate of return was calculated to be negative. Revenue on Subprojects 6 and 7 is projected to be sufficient to cover ongoing operations and maintenance costs.

- The economic internal rate return for projects on Tongatapu has been calculated to be 15.4%, significantly exceeding the economic threshold of 6% for projects with significant environmental and other benefits. Combined, the TREP is calculated to have an economic internal rate of return of 6.1%, marginally exceeding the economic threshold of 6% for projects with significant environmental and other benefits.



Project Geographical Implementation In Tongatapu



TREP Project Schedule

### Tonga Renewable Energy Goal Post 2020

TREP under the GCF funding, will enable Tonga to increase its renewable penetration with the goal of becoming 70% RE by 2030, and ultimately 100% RE. The modelling of reaching 100% RE is achievable by way of Solar, Wind and BESS but not without a significant investment on the Power Station & Network



### Conclusion

The approval of the GCF proposal will enable TPL to fully implement a very tight schedule right through to the end of December 2020 in order to achieve 50% RE. It goes without saying that the transformational shift away from the traditional reliance on fossil fuels toward a greater emphasis on climate-resilient renewable energy systems, coupled with battery energy storage system (BESS) and reduced GHG emissions as well as promotion of more private sector investments into renewable energy development, makes for a very exciting 2 years ahead for Tonga and Tonga Power Limited.



# TRANSFORMER TESTING DOESN'T NEED TO BE EXPENSIVE OR COMPLICATED

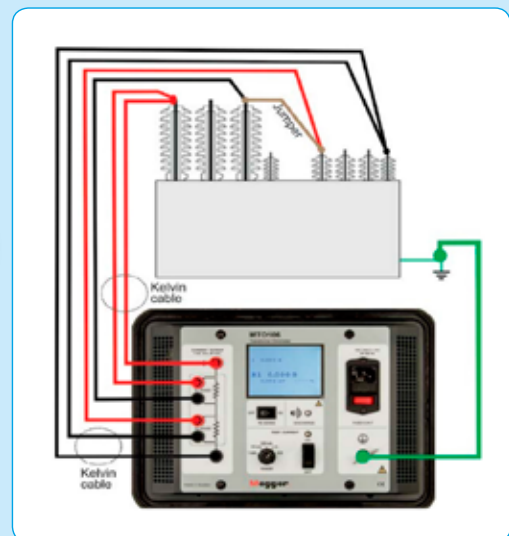
The new Megger MTO106 is exceedingly simple to use with minimal training/experience required. Portable and cost effective it's ideal for uncomplicated transformer winding resistance testing on the smaller transmission and distribution transformers

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## Renewable Energy Integration on Islands and Remote Locations: A Return on Experience

Istvan Ponsot

Head Business Development Pacific, Indian Ocean – Vergnet SA

*Connecting a 500kWp solar plant to a 5MW diesel grid is not considered hybridation...*

.... Because saying a Hybrid grid is a grid with renewable energy is not enough

### Hybridation at VERGNET

We consider an installation to be hybrid if for a reason or another a curtailment of renewable energy is required.

This curtailment can be necessary for multiple reasons such as respecting the Thermal gensets operational limits, Spinning reserve, renewable power excess, Voltage regulation, Frequency regulation, Grid safety, Power quality (Harmonics, flicker) ...

### Isolated grids key issues:

Small Islands grids are characterized by:

- Small installed power
- Limited short circuit power, high ratio of peak demand to short circuit power
- Limited spinning reserve
- N-1 contingency rarely used for diesels.

**Theses specificities lead to potentially high variations of voltage and frequency in case of grid fault or power producer failure.**

**Grid security can be an issue when adding renewables**

- Short circuit power can be too low to trip existing protections
- Specific grid protections have to be designed and properly set

The case studies presented below illustrate various possible approaches and benefits to developing hybrid plants into non-interconnected grid such as islands and remote locations.

Hybrid renewable energy projects designed and installed by Vergnet, range from an average 10-30% renewable energy contribution into the mix and up to 100% in grid-forming configuration.

### LES SAINTES, Guadeloupe (2005)

Utility did not anticipate the connection issues

Impedance at point of common coupling was too high, this was the first time VERGNET encountered hybridization issues.

### Solution

A basic form of automatic regulation had to be implemented:

- Voltage regulation at turbine level
- A power limitation
- Utility agreed on a downgraded Power Factor



### NOUADHIBOU, Mauritania (2008)

SNIM iron ore terminal

More than 12 Mt of ore per year is transported by train from the mines to Nouadhibou harbor to be loaded and exported by sea.

**Site conditions**

- Wind speed 8.78m/s at hub height, Weibull 3:63
- Near shore, hot climate, no rain, very high corrosion, sand
- Average load 5.5MW, max load 10MW
- 4.4 MW Wind
- 44MW diesel gensets



**VERGNET proposed a full grid study:**

To assess and guarantee the achievable wind power penetration according to wind profile, grid load cycles and diesel gensets characteristics while ensuring:

- Security of goods and persons
- Availability of the grid
- Power quality

**The studies covered the following points:**

- On site measurement session to precisely characterize the gensets performances
- Numeric modeling of the whole grid with producers and consumers
- Simulation campaign addressing all possible cases
- Diesel-Wind power plant operating rules definition from analysis of simulation results

**Simulation:**

We define the penetration ratio 'r' by :

$$r = [PW/PL] \times 100 \text{ (1)}$$

Where PW is wind power, PL is load power.

" Δ " represents cases with a blackout risk due to lack of spinning reserve

" ⊖ " represents impossible cases.

Load (kW)	Nb running groups		
	1	2	3
1000	20.0%	⊖	⊖
1500	46.7%	⊖	⊖
2000	38.3%	20.0%	⊖
2500	30.6%	36.0%	4.0%
3000	25.5%	46.7%	20.0%
3500	21.9%	43.7%	31.4%
4000	19.1%	38.3%	40.0%
4500	Δ	34.0%	46.7%
5000	Δ	30.6%	45.9%
5500	Δ	27.8%	41.7%
6000	Δ	25.5%	38.3%
6500	Δ	23.5%	35.3%
7000	Δ	21.9%	32.8%
7500	Δ	20.4%	30.6%
8000	Δ	19.1%	28.7%
8500	⊖	Δ	27.0%
9000	⊖	Δ	25.5%
9500	⊖	Δ	24.2%
10000	⊖	Δ	23.0%

Achievable long term penetration ratio

**Field Tests:**

The behavior of the diesel power plant and wind power plant was checked during both normal and unforeseen transient events like:

- Disconnection of one or several wind turbines

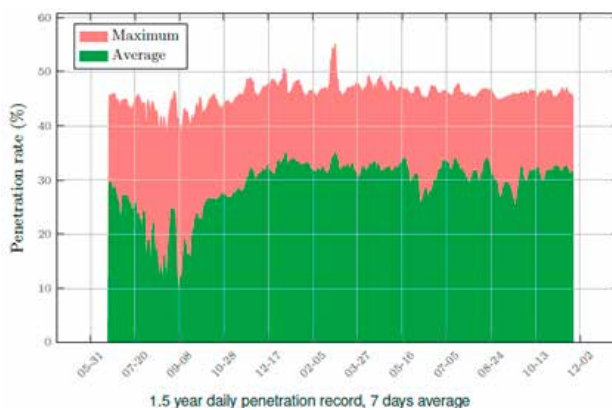
- Disconnection of the whole wind power plant
- Starting of power loads
- Disconnection of loads
- Disconnection of a diesel group

Customer did not allow a full automation of diesel Genset so operating values are set by operators, a set of operating rules were defined to set the wind power plant power level according to grid state.

**Results:**

Very good results are achieved thanks to exceptional site conditions.

- Around 30% average wind penetration
- Wind power plant output: 19GWh/year
- Fuel savings : 4800 tons/year
- Pollution avoided (CO2;NOx ;SO2): 11 500 t/year

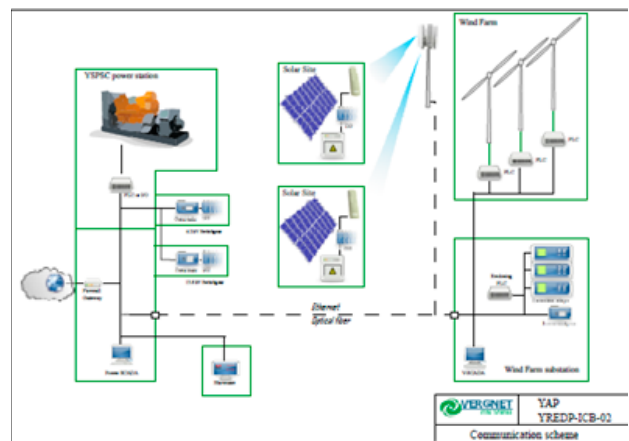


**YAP, FSM (2018)**

**“The goal for integration and control system is to achieve highest possible renewable energy penetration, while maintaining power system stability and electric energy supply reliability at the same time. To ensure this, the integration and control system will take control over all other components in Yap power system, scheduling of diesel generators, and dispatching wind and solar generation. . . ”**

**System Architecture**

- 3 x275kW wind turbines
- 5 solar plants : 508 kWp
- New Generators: 4 130kW
- Power analyzers at grid key points
- Island wide communication and power management
- Average load: 1 500kW



**Controller:**

- Hybrid Wizard is the result of Vergnet's experience in non-interconnected grids
- Suitable for any combination of solar, wind, battery storage.
- Real-time control of Power Quality
- RE penetration is always maximized to what the grid can accept
- Grid stability is ensured
- Grid security is ensured

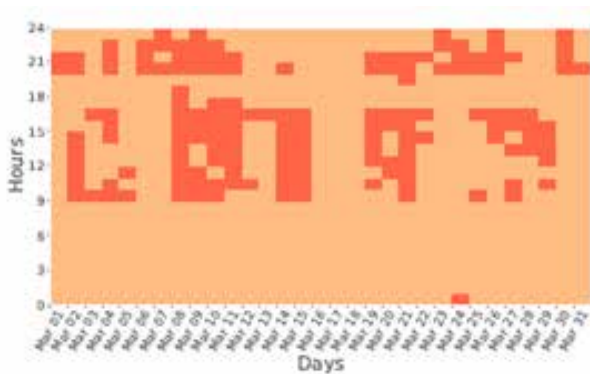
**Studies:**

At bid time a simple load flow study was performed to assess performances. The data below are shown over a period of 1 month to remain legible Heat map showing the number of connected diesels shows how renewables contribute to reducing the hours of operation of the gensets:

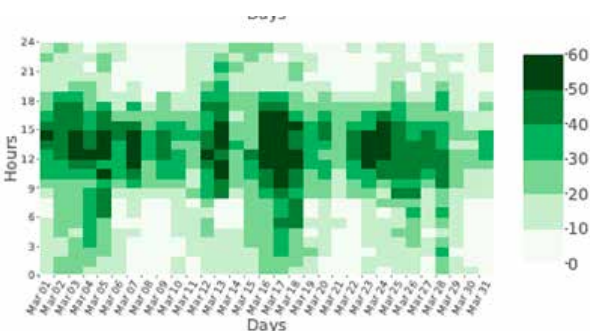
Without renewable energy



With renewable energy:



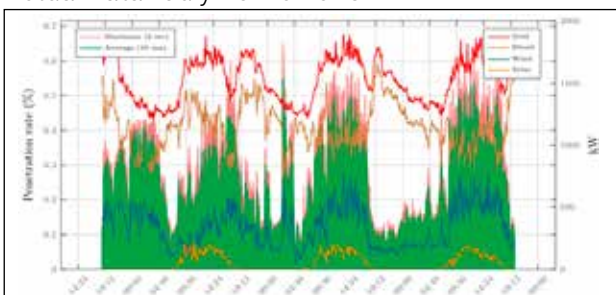
Expected penetration rate:



At project execution, a Grid study similar to Nouadhibou was then performed

**Results:**

Actual data - July 23-26 2018:



- Up to +40% average RE share (Wind + PV)
- Instant RE penetration > 50%
- No battery storage

**Conclusion:**

- Preparation work is key: ensure that the concepts for a hybrid project are properly defined since the beginning (importance of hiring consultants to complement internal competencies)
- Technological choices and targets must fit to the local resources, capability and infrastructures
- Solar and wind and other RE sources are complementary, make the most of them
- Take hybrid configuration into account when creating or upgrading conventional power plants: most existing installations often have individual genset size generally too large for fine adjustment of spinning reserve
- Take Operation & Maintenance into account from the very beginning of the project
- If knowhow is not already available, include a capacity building programme

**About VERGNET**

Vergnet has an extensive experience in connecting unpredictable renewable energy to weak grids. The company installed its first wind turbines on a small island diesel grid in 1989. It has since completed numerous island and remote projects worldwide, involving various combinations of wind, solar, battery storage, connected to existing or new power plants.

**Company ID:**

- Location: Orleans, France
- Wind, Solar & Hybrid solutions provider
- Project development, co-development, investment
- 29 years experience of project execution in complex and isolated areas
- Worldwide presence: 365 MW installed (Wind and PV) in 40 countries,
- Permanent subsidiaries in
  - Pacific (Noumea)
  - Caribbean
  - Indian Ocean
  - Africa
- Projects completed by Vergnet in the Pacific and SE Asia include:

Australia, Fiji, French Polynesia, Guam, Japan, Kiribati, New Caledonia, New Zealand, Pohnpei, Samoa, Vanuatu, Yap

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We have completed many installations throughout the Pacific Islands including The Cook Islands, (Rarotonga, Mangaia, and Atiu), Tahiti, (Bora Bora), New Caledonia, Vanuatu, Micronesia and Kiribati.



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**New Zealand Company Infratec are Quickly Positioning Themselves as the Company of Choice for Ongoing Renewable Energy Projects in The Pacific.**

**Infratec**

To date, Infratec has successfully delivered solar PV mini-grids on four of the Southern Group of Cook Islands – Atiu, Mangaia, Mauke and Mitiaro.

The mini-grids will supply each island with about 95% of their electricity needs. The systems will reduce diesel consumption by about 360,000 litres annually and eventually will remove about 960 tonnes of CO2 emissions a year and will supply the islands' residents with a more reliable power supply.

Communications Advisor Rebecca Flannery says renewable energy is the cornerstone to building resilient communities, with a stable power supply industries like Agriculture and Tourism become attainable and sustainable. True sustainability must contain environmental, economic, and social elements. The mini-grid on Mauke has allowed a commercial refrigeration unit to be considered for supporting the export of fruit, vegetables, and fish. This, will, in turn, benefit the local economic and allow the previously unviable local industry to prosper, creating new employment opportunities.

Infratec actively sought to employ local workers throughout the projects, and since commissioning have been providing ongoing training and support, Infratec is not about installing mini-grids, we are all about leaving a community in the best possible condition to embrace a sustainable future.

The Cook Islands has one of the most aggressive renewable energy targets and is positioning itself to be a world if the 2020 deadline is met as outlined in the 2012 policy on renewable energy.

Flannery says Mangaia have produced 24k of revenue in the first month of operation; historically this is the cost of diesel supply, this has allowed the Island EO Anthony White to employ additional staff for maintaining the Island.



*Mangaia, part of the southern group.*

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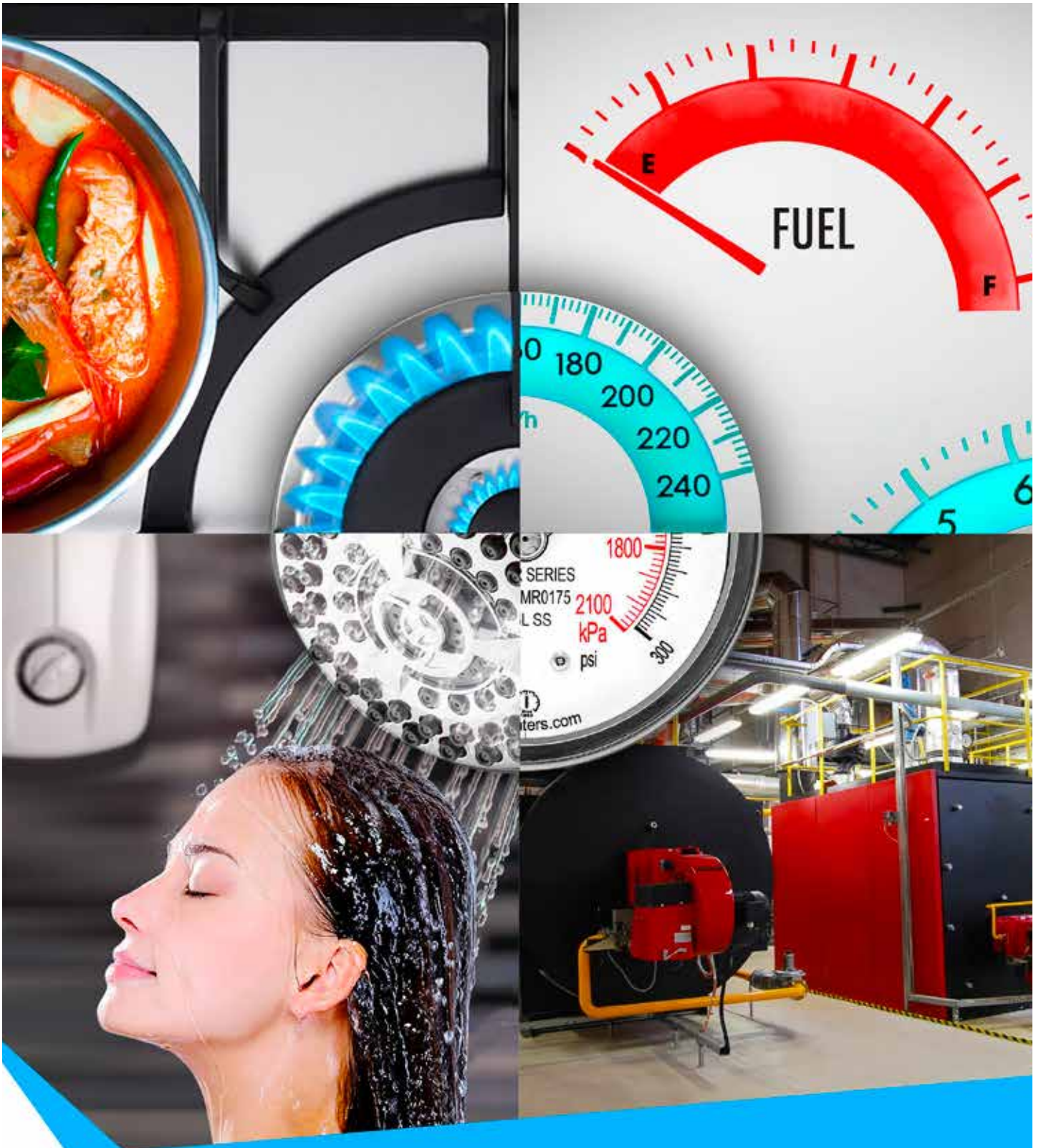


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## B&R Enclosures Solves Temporary Power Solution

B&R Enclosures Pty Limited

### THE PROJECT

Solomon Power is managing a grant-financing project from the Global Partnership on Output-Based Aid (GPOBA) administered by the World Bank for an Output-Based Aid (OBA) program. This program is designed to help low income households pay for the on-off upfront initial connection fee to access grid electricity.

The Output-Based Aid (OBA) program aims to energise a total of 2,565 households in the Solomon Islands. The Solomon Islands Electricity Authority (SIEA) trading as Solomon Power (SP) is a State Owned Enterprise (SOE) constituted under the Solomon Islands Electricity Act of 1969. They are responsible for the generation, transmission, distribution and retail of electricity. This body also has the responsibility for providing electricity efficiently and profitably throughout the Solomon Islands.

Low income households tend not to connect to the power grid because of the high up-front costs, being left with no access to income-producing benefits and improved welfare from grid electrification. Residents tend to spend more on expensive and low quality electricity supply, such as car batteries or small solar home systems.

The OBA Program is designed to provide one-off subsidies to eligible low-income households to cover a portion of the upfront cost of electricity service connections in the Honiara grid (existing service area and planned expansion areas), and in the outstations. The OBA subsidy covers materials and installation of the service line and auxiliary pole, when needed; and in-house wiring including protection, earthing, and two LED light bulbs in accordance with the AS/NZS Wiring Rules 3000 and Solomon Islands Electricity Act & Regulations.

### THE B&R SOLUTION

B&R hosted Solomon Island's Electrical Authority Regulatory Manager, Mr Kitione Maluguleva in late 2016. Mr Maluguleva visited to tour the facilities in Heathwood, Brisbane. His visit included discussion

on how B&R could assist with providing a turnkey offer ensuring ease of supply and installation.

The supply of the electrical enclosures was done in two stages with the first stage of supply consisting of 200 units of Temporary Power enclosures TB1212/U. A second order was placed with B&R for the Temporary Power TB1212/U that were fully wired with switchgear, GPO's and lights supplied within the enclosure.

This ensured ease of managing the rollout with the installing contractors and were custom built to suit their needs. B&R used extensive experience through their value add services team to manage the wiring and fitout of the enclosure. This ensured strong and consistent connections with switchgear and accessories suppliers in Australia to provide a complete package offer.



*L to R: Doug Searle and Mark Gosper (B&R Enclosures) had the pleasure of demonstrating B&R's Australian based manufacturing facilities to Kitione Malugulevu and David Siriu of Solomon Power.*



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## Guam Power Authority Employees Association and Guam Power Authority Donate for Typhoon Yutu Recovery

### Guam Power Authority

Guam Power Authority Employees Association (GPAEA), Guam Power Authority (GPA) management and employees and the Guam Consolidated Commission on Utilities (CCU) Commissioners collected monetary donations along with goods and supplies in a show of support for Typhoon Yutu relief, donated to the Commonwealth Utilities Corporation (CUC) in Saipan.

"We are happy to support our fellow utility employees of the CUC in Saipan. We are empathetic to their suffering and recovery from the devastation caused by Typhoon Yutu and thus we proudly give these donations from our hearts," stated GPA General Manager John M. Benavente, P.E.

The GPA general manager went on to say, "GPA advance and first wave employee teams along with heavy equipment and materials and supplies deployed to Saipan as early as October 28, 2018 and immediately went to work in 16-hour shifts to restore critical areas with power. We responded to assist with our expertise and assets, as we know the CUC can and would assist our utility if the situation were reversed," concluded Benavente.

Benavente also thanked Marianas Energy Corporation (MECO) for responding in support of the Typhoon Yutu donation relief efforts to be sent to the CUC in Saipan, as well.



Shown above at the GPWA Headquarters in Fadian on November 21, 2018, are Guam CCU Commissioners, Guam Power Authority Executive Management and Guam Power Authority Employees Association representatives displaying a check for a monetary donation to be presented to the Commonwealth Utilities Corporation (CUC) in Saipan for Typhoon Yutu relief, donated to the CUC utility employees. Marianas Energy Corporation (MECO) and Guam Power Authority employees also donated goods and supplies to support the relief efforts. (L-R): D. Graham Botha- GPA Staff Attorney; Melinda C. Mafnas, P.E.-GPA Assistant General Manager of Operations; Tricee P. Limtiaco-GPA Assistant General Manager of Administration; Joey T. Duenas-CCU Chairman, Jon- Rey Aguigui-GPAEA President; Judy Guthertz-CCU Commissioner; John M. Benavente, P.E.-GPA General Manager; J. George Bamba-CCU Commissioner, Francis Santos-CCU Commissioner; John J. Cruz, Jr., P.E.-GPA Assistant General Manager Engineering & Technical; and John J.E. Kim, CPA and GPA Chief Financial Officer.

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## Guam Power Authority Employees Association Members and Marianas Energy Corporation Management and Employees Donate for Typhoon Yutu Recovery

### Guam Power Authority

Guam Power Authority Employees Association (GPAEA), along with the management and employees of Marianas Energy Corporation coordinated and collected goods and supplies in

a show of support for Typhoon Yutu relief, to be donated to the Commonwealth Utilities Corporation (CUC) employees in Saipan, CNMI.



Shown at the Marianas Energy Corporation compound in Piti on November 21, 2018, is Jon-Rey Aguigui-Guam Power Authority Employees Association President and employees of Marianas Energy Corporation (MEC): Front row (L to R): Aguigui, Kim Garrido, Takahiro Ozasa, MEC Deputy General Manager; Rino Manzano, MEC General Manager; Rene Acaín, MEC Plant Manager; Salvador Dela Cruz, Boyet Garcia, Gerald Sam. Second row (L to R): Geri B-Santos, Josie Camacho, Oscar Lee, Lucila Hasanon, Bobby Nababos, Ailee Buendia, Marlon Dimaano, Manny Mendoza, Francis Bersamin, John Eleco, Sammy Richards; and third row (L to R): Berlin Santer, Oscar Serrano, Tom Simina.

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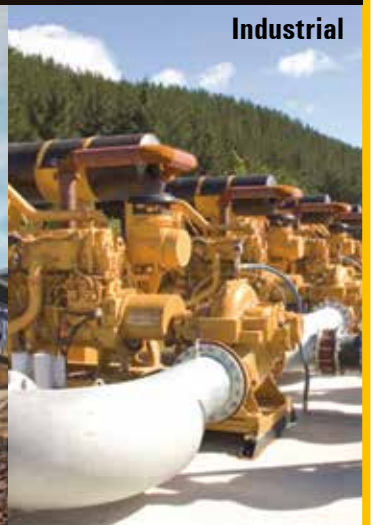
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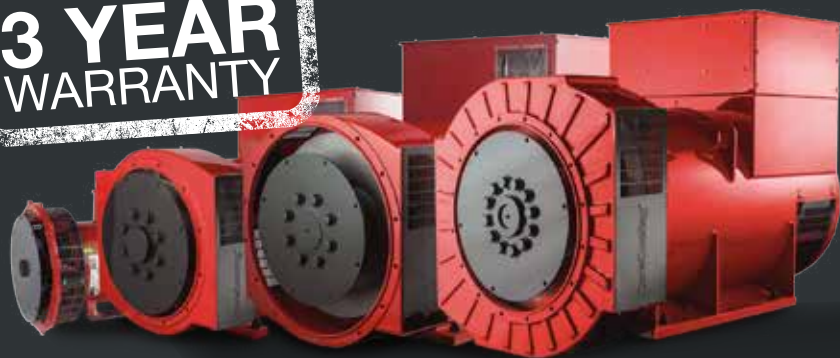
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## ASPA Rates To Drop Significantly When Two Energy Projects Completed

### American Samoa Power Authority

One of the projects is for wind generation, according to ASPA acting CEO

Pago Pago, AMERICAN SAMOA — When the American Samoa Power Authority's two alternative energy projects — with an estimate cost of about \$142 million — are complete, utility rates will “drop significantly” by 11-cents per kilowatt hour, said ASPA acting executive director, Wallon Young at last Friday's cabinet meeting.

Reporting on the latest development at ASPA, Young told cabinet members that he was “pleased to report” that ASPA has signed the power-purchase-agreement (PPA), or contract, for 20-megawatts of PV for Tutuila.

At the same time, he added, ASPA is in the process of awarding another PPA or contract, for 42-megawatts of wind generation, and these are two “significantly large” projects — the PV project is estimated to cost \$47 million while wind generation is about \$100 million.

For comparison, he said the new Satala Power Plant, replacing the old one destroyed by the 2009 tsunami, cost \$52 million.

Young explained the “financial model” used by ASPA for the two projects. Under the PPA, “the developer and the investor — they finance, they design, and they build the plant. And they also sell the production to ASPA.”

“Just to give you some idea. ASPA's cost for electric generation today is about 27-cents per kilowatt hour. Of that 27-cents, 24-cents is fuel and 3-cents is for operation and maintenance,” he explained.

When the two projects are completed, “ASPA's purchasing cost of power from these investors will be around 11-cents a kilowatt hour. So you compare 11-cents to 27-cents. Electricity prices when compared to today, will be about 30 to 40

percent lower, and it will go on for 25 years. So it's going to be a significant drop in utility rates.”

“The big plus for this is — currently ASPA spends about \$27 million to \$30 million on diesel every year, but this money goes directly to the fuel company, which then ships the money off island. The money doesn't stay here,” he pointed out.

But when these two projects are completed, “more than 50% of the money will stay in the local economy. And for every dollar spent, there's a multiplying effect of about three,” he explained, adding that “some economists believe the multiplying effect is five-times.”

“But customers will have additional money in their pockets to spend and improve the local economy,” said Young, who gave a brief summary of other ongoing projects such as the Tafuna Power Plant; the Ottoville project, which will secure the supply for the Fagaima water wells during hurricanes; a \$10 million sewer project called Package 5, which is in progress as well; and about a dozen other projects of different sizes.

In response to the news of future drops in utility rates, Gov. Lolo Matalasi Moliga recalled that when the Administration took the helm of government in January 2013, the price per kilowatt hour was “somewhere over 40-cents, and we have come a long way.”

He also recalled sitting down at the time with the late Utu Abe Malae, before Utu took over the executive director role at ASPA, to discuss bringing down the rates. “He promised to bring the rate down to at least 15-cents before the end of our administration,” said Lolo, who asked Young to continue moving forward with bringing the rates down.

“This is the life of our people. If we bring it down, everybody will benefit,” said Lolo, who explained



that this is the reason why the Administration is giving ASPA access to every piece of government land for solar panel projects.

“ASPA is given priority to use up any [ASG] land to make sure that we give our people the benefit of electricity and water,” Lolo said.

While the cabinet meeting was ongoing at the Agriculture Department conference room in

Tafuna, just down the street at the Industrial Park – across from ANZ Bank – there was a get-together honoring ASPA's Transmission & Distribution Team during their week-long program. The gathering included family members for the T&D Team.

Source: Samoa News



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