



# Environment Stewardship - Fiji Renewable Energy Plan Support & Sustainability

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| Update to the Pacific Power Association Family |  
| 29<sup>th</sup> Pacific Power Association Conference. Brisbane, Australia |  
| Thursday 24<sup>th</sup> November 2022 |  
| Brisbane Convention & Exhibition Centre |

## Presentation Outline



- ▶ Environment Stewardship – Fiji’s Renewable Energy Plan Support & Sustainability
  - ▶ Vision, Mission & Values
  - ▶ EFL’s Renewable Energy Plan
  - ▶ Power Development Plan
  - ▶ Operational Renewable Energy Schemes
  - ▶ Prospective Renewable
  - ▶ Network Development
  - ▶ Discussions

Environment Stewardship –  
Fiji's Renewable Energy Plan  
Support & Sustainability

EFL's Renewable Energy Plan

## Our Vision

Energising our Nation

## Our Mission

We aim to provide clean and affordable energy solutions to Fiji with at least 90% of the energy requirements through renewable sources by 2025.

## Our Values

Customer focus

Honesty

Do what is right for EFL

Team work

Individual accountability

Transparency

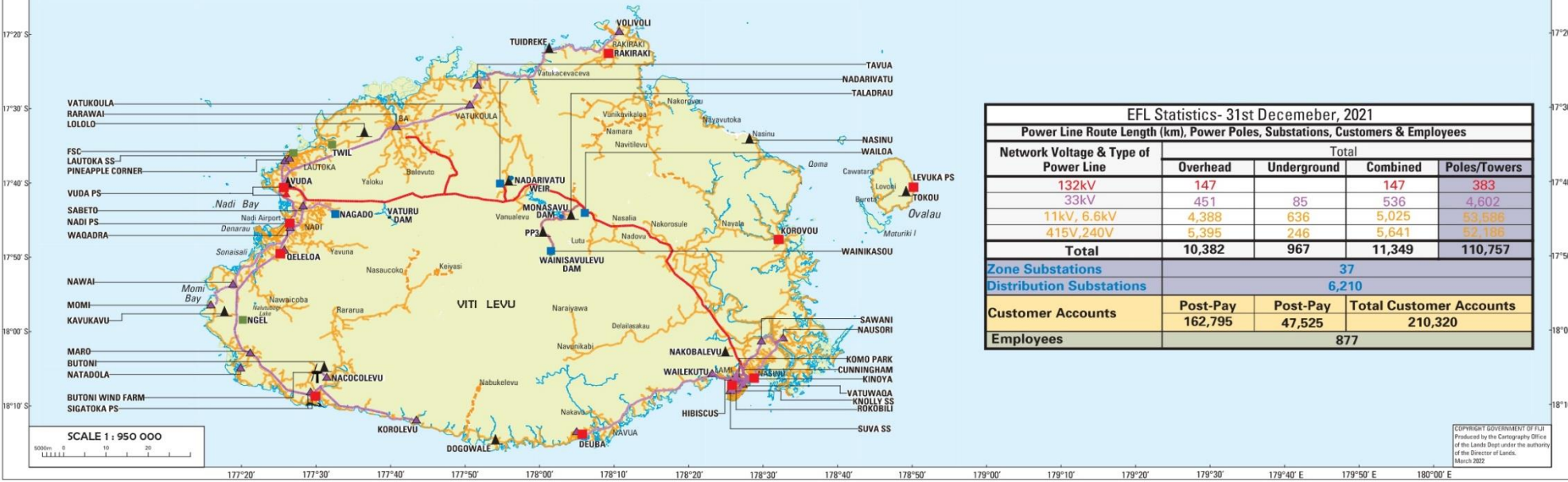
Innovativeness

**VISION**  
 'Energising our Nation'  
**MISSION**  
 'We aim to provide clean and affordable energy solutions to Fiji with at least 90% of the energy requirements through renewable sources by 2025'



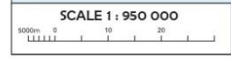
**EFL POWER SYSTEM LEGEND**

	132kV Line		Diesel Power Station
	Proposed 132kV Line		Hydro Power Station
	33kV Line		132kV Substation
	Proposed 33kV Line		33kV Substation
	11kV Line Coverage		Butoni Wind Farm
	Proposed 11kV Line		Biomass/ IPP Power Station
	6.6kV Line Coverage		EFL Repeater Station



**EFL Statistics- 31st Decemeber, 2021**

Power Line Route Length (km), Power Poles, Substations, Customers & Employees				
Network Voltage & Type of Power Line	Total			
	Overhead	Underground	Combined	Poles/Towers
132kV	147		147	383
33kV	451	85	536	4,602
11kV, 6.6kV	4,388	636	5,025	63,606
415V, 240V	5,395	246	5,641	62,186
<b>Total</b>	<b>10,382</b>	<b>967</b>	<b>11,349</b>	<b>110,757</b>
<b>Zone Substations</b>	<b>37</b>			
<b>Distribution Substations</b>	<b>6,210</b>			
<b>Customer Accounts</b>	<b>Post-Pay</b>	<b>Post-Pay</b>	<b>Total Customer Accounts</b>	
	162,795	47,525	210,320	
<b>Employees</b>	<b>877</b>			



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 March 2022



## ➤ Power Development Plan (PDP)

- ▶ EFL reviews its Ten Year Power Development Plan (PDP) every 2 to 3 years.
- ▶ As per the Power Development Plan (2022 - 2031) study carried out this year, a total capital investment of FJ\$4.274B will be required in the development of generation and network infrastructures as follows:
  - ▶ Power Generation Projects - \$2.97B. These costs also include all hydro power plants which are expected to be commissioned beyond 2031 such as Qaliwana, Lower Ba Cascade (Vatutokotoko, Senibobo) Hydro Schemes.
  - ▶ Transmission and Sub-transmission Projects - \$1.12B.
  - ▶ Distribution Projects - \$0.184B.
- ▶ EFL expects the private sector to invest in the Power Generation Sector as Independent Power Producers (IPP) or on a Private Public Partnership (PPP) basis.

# ➤ Operational External Renewable Energy Schemes



## ▶ Biomass & Solar

	Supplier	2019 Feed in (kWh)	2020 Feed in (kWh)	2021 Feed in (kWh)	2022 – End Oct Feed in (kWh)
1	TWIL	28,708,570	34,522,250	31,396,523	26,433,090
2	FSC Lautoka	3,433,500	9,611,202	1,993,669	5,551,932
3	FSC Ba	81,333	222,956	396,544	586,728
4	Nabou Green	4,604,000	11,348,000	19,498,000	19,705,108
5	FSC Labasa	10,378,100	10,112,911	6,243,195	9,648,627
6	Solar Roof Top	1,610,007	1,276,437	1,524,929	833,067

- ▶ TWIL has a PPA with EFL for the supply to the EFL.
- ▶ FSC supplies energy to the EFL grid during the crushing season from their Lautoka, Labasa & Ba Sugar Mills
- ▶ Nabou Green Energy Limited has a 12MW biomass plant and started feeding into the EFL grid since July, 2017.
- ▶ Solar - Individual rooftop installation feed in the excess (surplus energy) into the EFL grid.
  - ▶ 2019 - 167
  - ▶ 2020 - 176
  - ▶ 2021 - 197
  - ▶ 2022 - 203

## ➤ Prospective Renewable Energy Projects – Viti Levu

EFL has plans to develop the following renewable energy schemes:

### ▶ Grid-connected Solar Power Plants

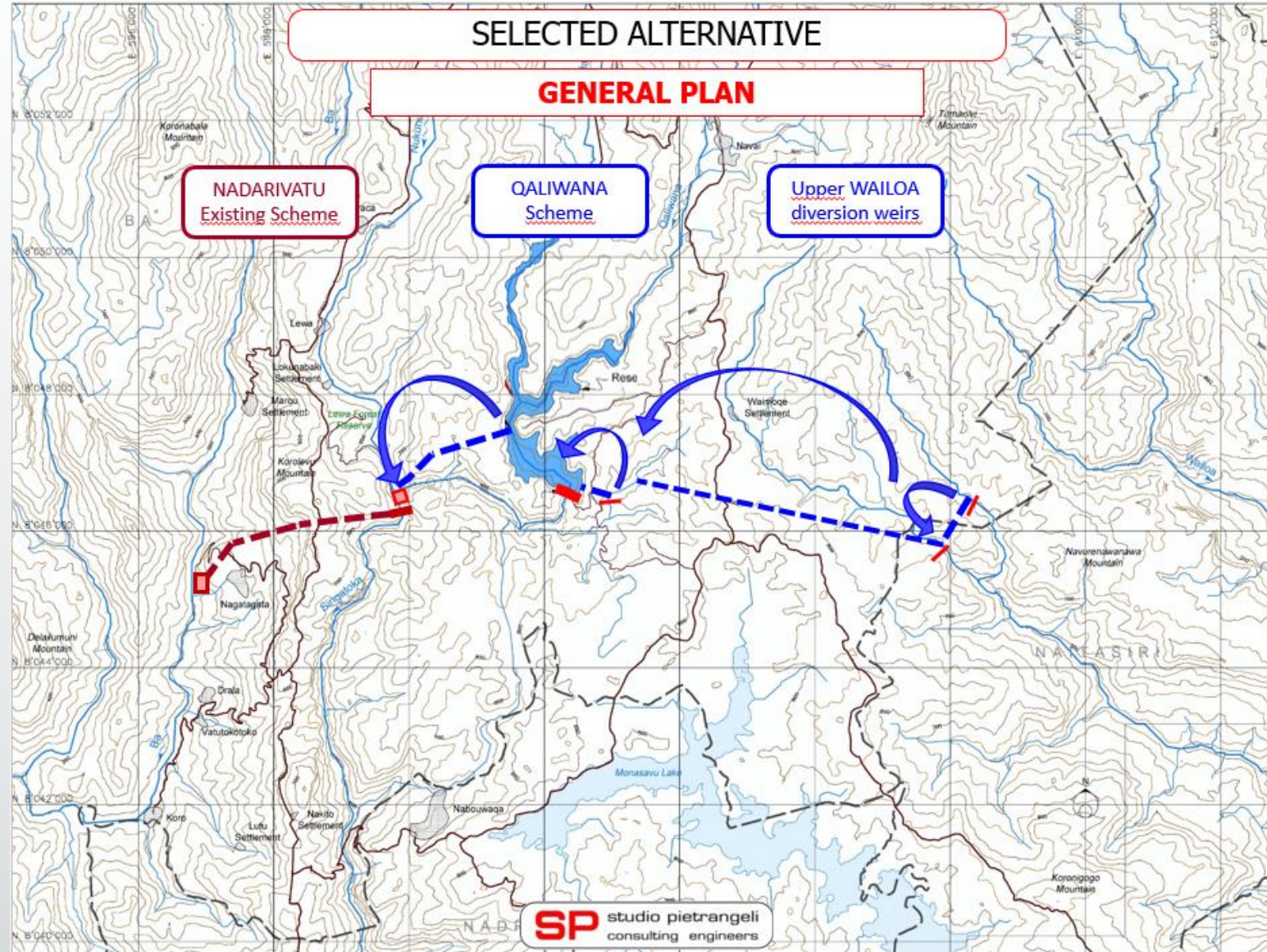
- ▶ 3 x 5MW (cumulative capacity of 15MW) in Tavua, Ba and Nadi - due-diligence is currently underway with International Finance Corporation (IFC) and projects could be developed either as IPP or joint-venture arrangement.
- ▶ 1 x 5MW in Qeleloa, Nadi - Power Purchase Agreement (PPA) was signed in 2021 with Sunergise Dratabu Pte Ltd and power to grid is expected by Q4 2023.
- ▶ 5MW solar power plant in Lautoka - EFL is working with Chugoku Electric Power Co., Inc. to identify and develop a project in Lautoka

### ▶ Hydro - Upper Wailoa & Qaliwana Diversion Project & the Lower Ba Project

- ▶ European Investment Bank (EIB) has appointed consultants to carry out feasibility studies for both the hydro-electric schemes.
- ▶ The feasibility study includes technical, environmental, social and economic feasibility assessment
- ▶ Both feasibility studies are now near completion and discussions have been undertaken with EIB and the consultants on draft submissions of the feasibility study reports
- ▶ EFL Board will deliberate on the development strategy upon receipt of feasibility study reports



# ➤ Prospective Renewable Energy Projects – Viti Levu

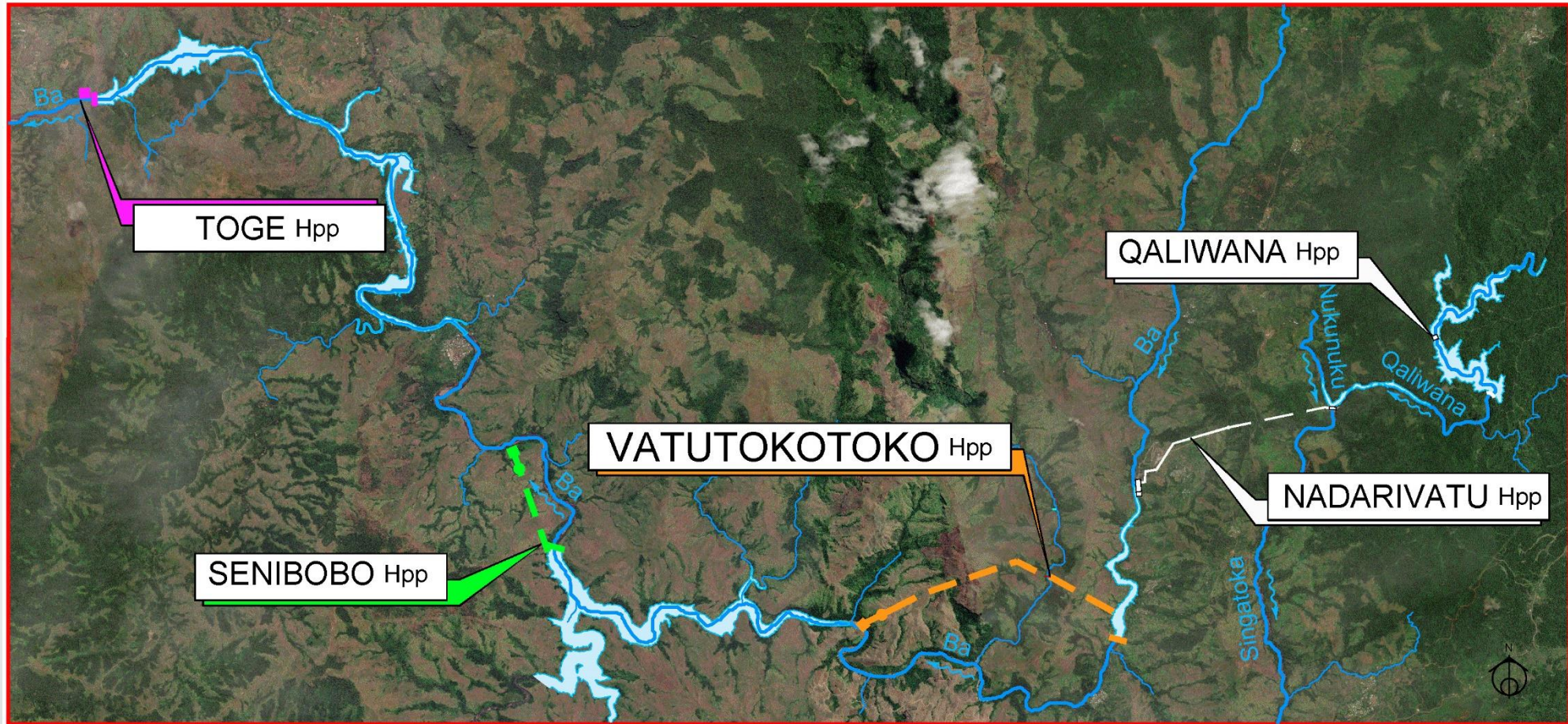


Overview of Qaliwana and Upper Wailoa Diversion project

\*source – Studio Pietrangeli presentation dated November 2022



# ➤ Prospective Renewable Energy Projects – Viti Levu



Overview of Lower Ba cascade (with Qaliwana & Nadarivatu HPPs)

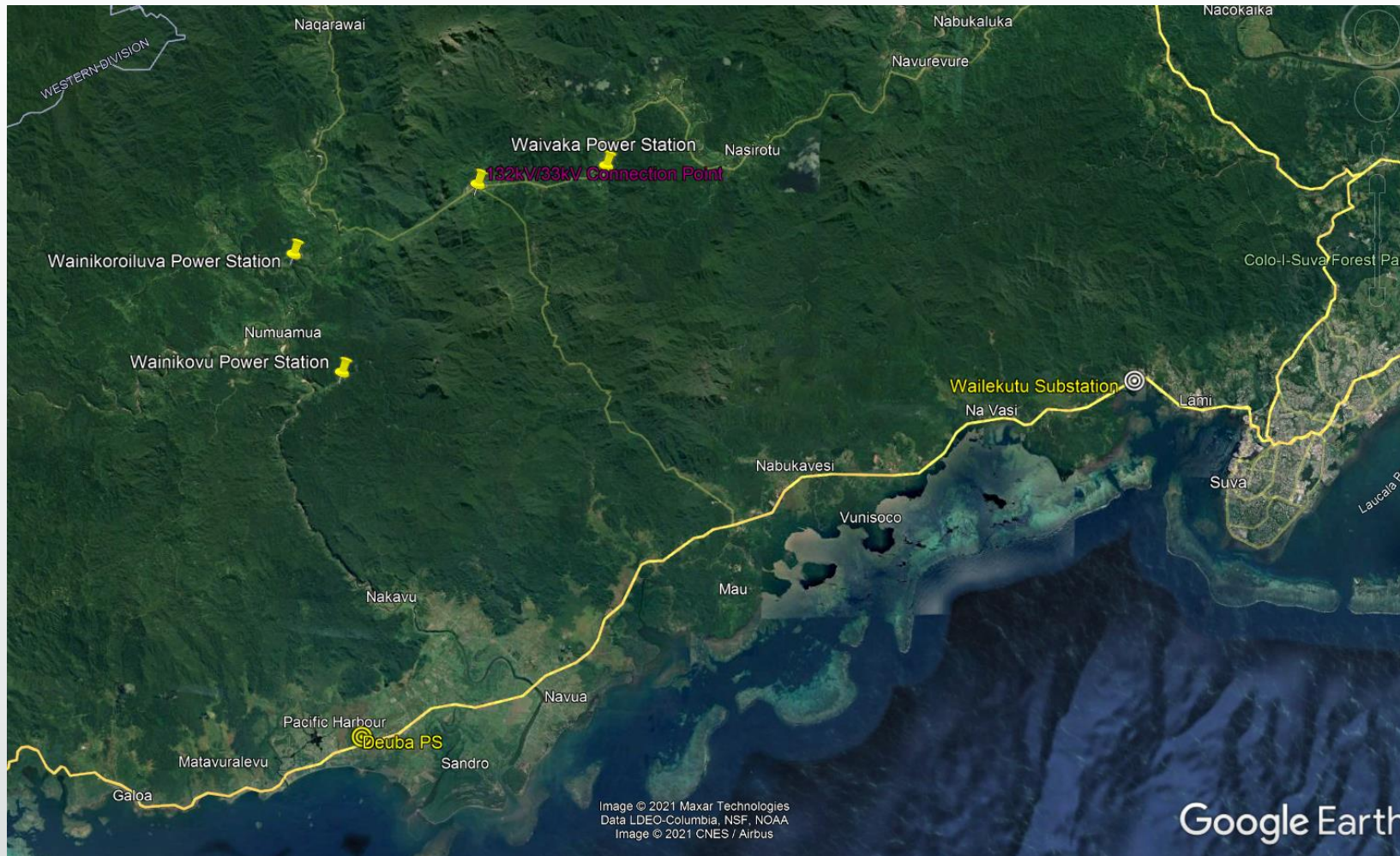
## ➤ Prospective Renewable Energy Projects – Viti Levu

### ▶ Hydro - Namosi Hydro-electric schemes

- ▶ Australia Infrastructure Funding Facility for the Pacific (AIFFP) has agreed to fund the feasibility study for this project
- ▶ Based on preliminary assessment the scheme can contribute upto 32MW in firm capacity and 120GWh towards Viti Levu's energy requirements
- ▶ EFL is also working with its shareholder Chugoku Electric Power Co (CEPCO) to explore other potential renewable energy projects and will be developing a long-term Renewable Energy Development Program accordingly.

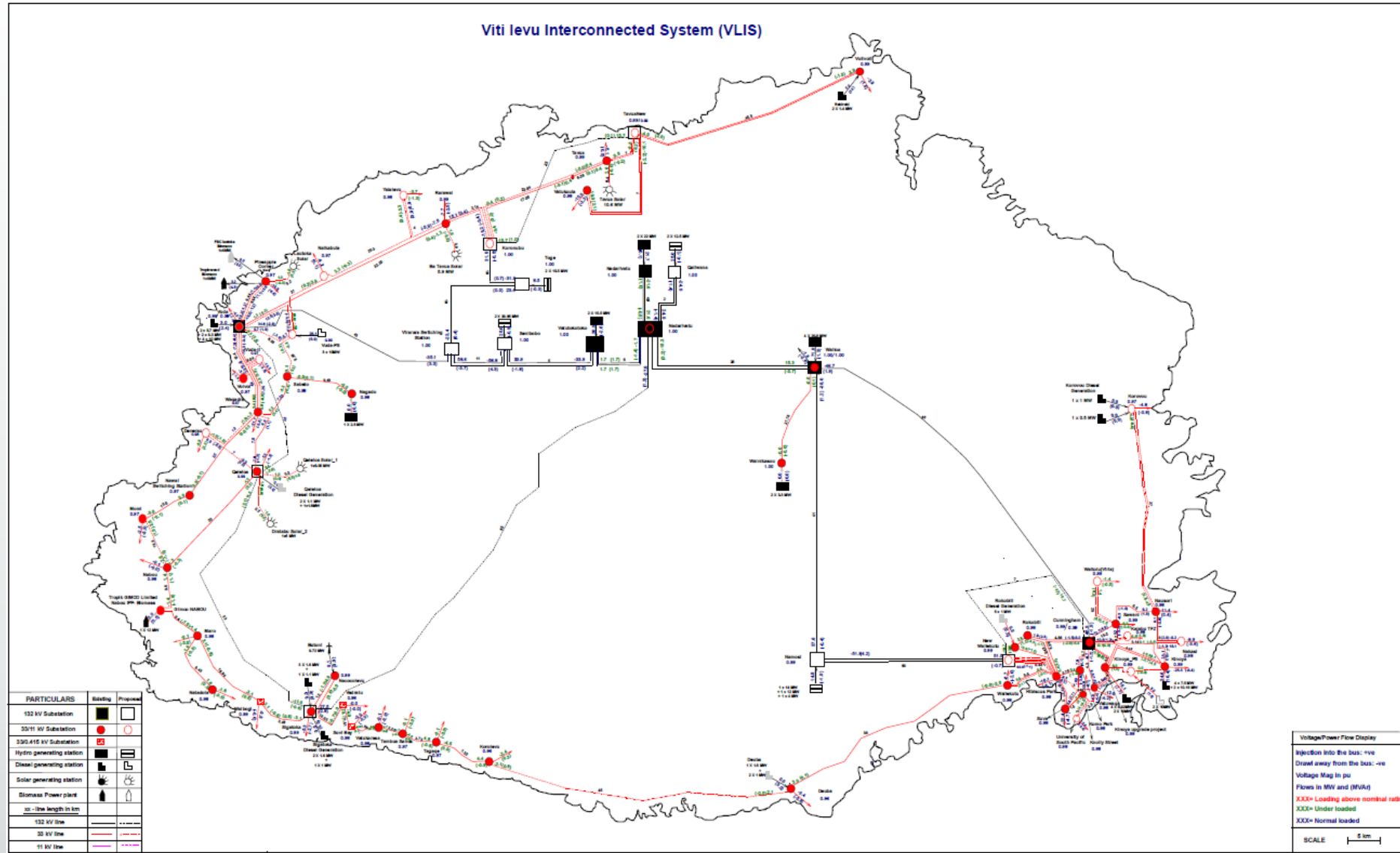


# ➤ Prospective Renewable Energy Projects – Viti Levu



Map of Power Station Sites and proposed switching station in Namosi relative to EFL's Wailekutu Substation

# ➤ Viti Levu Transmission Network Development



Envisioned Viti Levu 132kV Transmission Network (Long Term)

\*source – PRDC presentation 2022

## ➤ **Prospective Renewable Energy Projects – Vanua Levu**

- ▶ There are two independent power systems in Vanua Levu - Labasa & Savusavu
- ▶ EFL had called for Expressions of Interest (Eoi) for the Development of Grid - Connected Renewable Energy Projects in Vanua Levu, covering both Labasa & Savusavu Power Systems - Preferred models could be IPPs or PPP (JV).
- ▶ The selected parties from the Eoi process are now required to demonstrate feasibility of their projects so EFL can decide on the next steps.
- ▶ EFL is working with IFC for development of potentially 10MW solar power plant near Labasa
- ▶ There is also an opportunity for the establishment of an independent mini grid in the township of Nabouwalu.



## ➤ Prospective Renewable Energy Projects – Ovalau

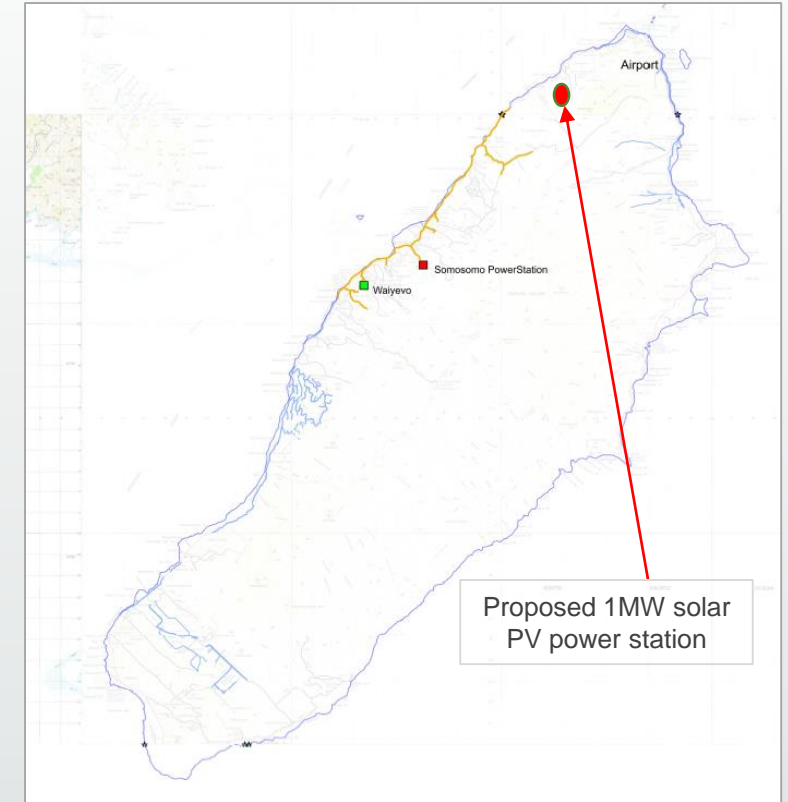
- ▶ The energy requirements for Ovalau is met through fossil fuel generation at present.
- ▶ The present peak demand in Ovalau is 1.8MW
- ▶ The largest customer in Ovalau is PAFCO with a peak demand of 1.2MW
- ▶ EFL intends to replace the entire fossil fuel generation on this island with renewable energy generation.
- ▶ EFL received a proposal from a South Korean company to establish an Agro-solar PV power plant (4MWp) in Ovalau and is currently in negotiations with the entity.



Location of proposed  
4MW solar power plant

## ➤ Prospective Renewable Energy Projects – Taveuni

- ▶ EFL entered the island of Taveuni in December, 2017.
  - ▶ Presently only 30% of the island is electrified.
  - ▶ The electrification for the remainder 70% will be done progressively under the Fijian Government's Rural Electrification Program
- ▶ The present power generation is as follows:
  - ▶ Somosomo Mini Hydro - 700kW
  - ▶ Waiyevo Diesel Plant - 2 x 1MW
  - ▶ The Mini Hydro Scheme is able to cater for the present peak demand of 480kW practically throughout the year
- ▶ Through grant aid, KOICA is in the process of developing a 1MW Solar PV Plant with 505kW/1011kWh battery capacity to be connected to the grid.
- ▶ This project is anticipated to be completed by Q3 2023.











VINAKA

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