



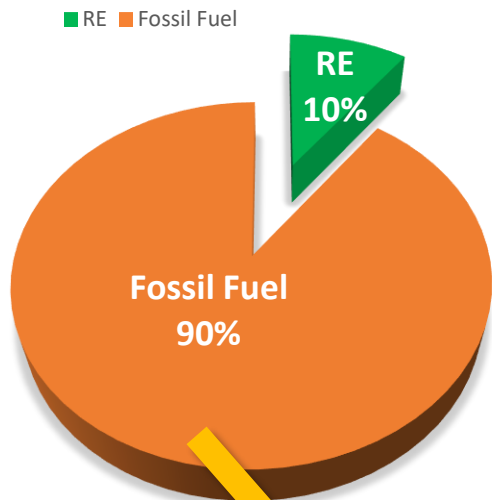
# Powering the FSM: Energy Sector Presentation

National R&D Conference – Chuuk State – January 2022

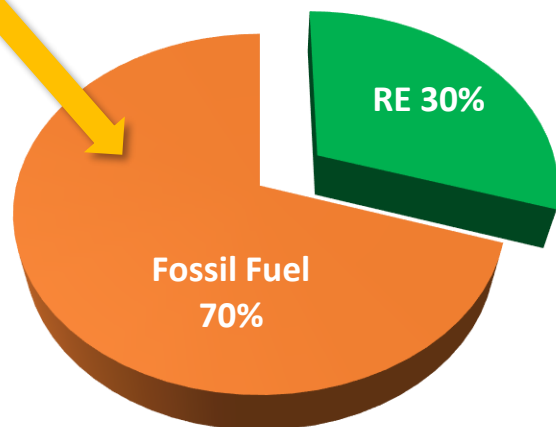


# INTRODUCTION & ENERGY TARGETS

FSM Energy Mix – 2020 Actual



FSM Energy Mix - 2020 Target



Capital Expenditure Requirements for FSM (US\$ million)

State	2019-2023	2024-2028	2029-2033	2034-2037	Totals
Pohnpei	35.63	19.97	24.76	30.80	114.02
Chuuk	38.35	16.39	16.81	13.85	86.00
Yap	15.09	13.22	15.77	13.55	58.90
Kosrae	12.03	8.64	6.86	6.96	37.26
	<b>101.1</b>	<b>58.22</b>	<b>64.2</b>	<b>65.16</b>	<b>296.18</b>

Electricity Access (HH)	RE Percentage	Diesel Use (million gallons)	Electricity CO <sub>2</sub> Emissions (tonnes)
2018: 67%	2018: 9%	2018: 4.2	2018: 43,490
2020: 82%	2020: 49%	2020: 2.9	2025: 21,980*
2027: 100%	2027: 66%	2027: 2.1	2027: 21,980
2037: 100%	2037: 79%	2037: 1.5	2037: 15,769

National Level Outcomes of State Energy Master Plans

# CURRENT ENERGY INITIATIVES

## Energy Projects in FSM (US\$ million)

Project	Donor	Duration	Amount
SEDAP	WB	2019-2024	30.00
REDP	ADB	2020-2024	19.50
FSM.SE	EU	2021-2025	16.00
JICA	Japan	2018-2022	13.00
ESDP	WB	2018-2019	13.00
HECG	US	2021-2023	5.30
REDP PRF	ADB	2022-2024	5.00
REDP DRR	ADB	2022-2024	4.00
JNPGA	Japan	2020-2024	2.00
MPSBEE	UNDP	2021-2023	1.70
<b>TOTAL</b>			<b>109.50</b>

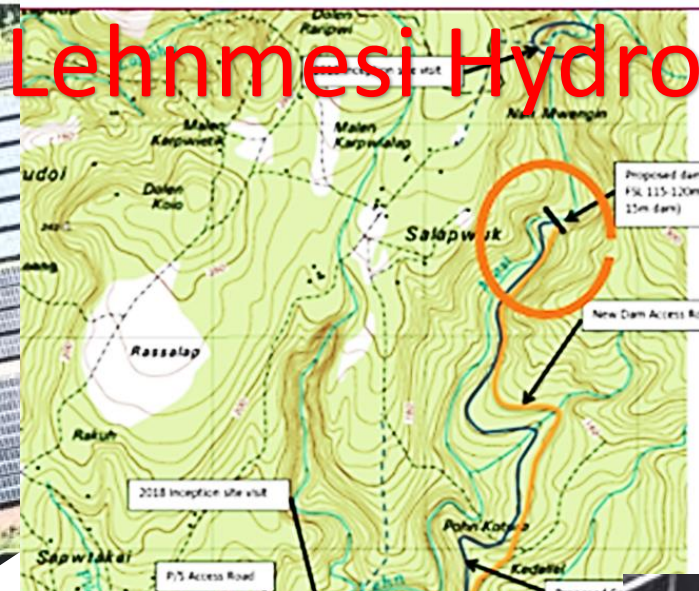




# POHNPEI UTILITY CORPORATION



Pohnlangas Solar



Lehnmesi Hydro



Nanpohnmal ORC

Completed and Ongoing Initiatives	Value (USD million)
Two 2 MW Genset w/ Spares & Overhauls	4.10
MFAT 274 kWp PV	2.90
Nanpohnmal 7.5MW Power Plant & SCADA	10.10
KSEL 2MW PV and BESS	9.00
200 kW ORC Generator	2.90
ADB PRF	2.00
Grid Enhancement & Owners Engineer	1.70
PUC Supplemental Management Ops.	1.30
ADB-PUC DRR	1.00
<b>TOTAL</b>	<b>35.00</b>



PUC Solar Technical Team



# KOSRAE UTILITY AUTHORITY

## Tofol Power Plant

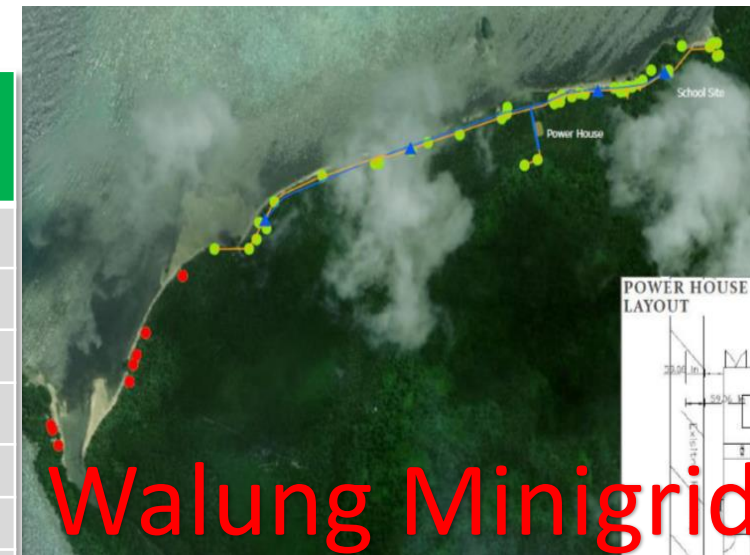


## Tofol 1.2 MW PV and BESS



## Solar Street Lights

Completed and Ongoing Initiatives	Value (USD million)
Tofol 1.2 MW Power Plant	10.70
1.2 MW Grid Tied PV	3.70
2 MW BESS & Owners Engineer	2.30
Walung Minigrid	1.20
ADB-KUA DRR	1.00
600 kW Generator	0.80
<b>TOTAL</b>	<b>19.70</b>



## Walung Minigrid



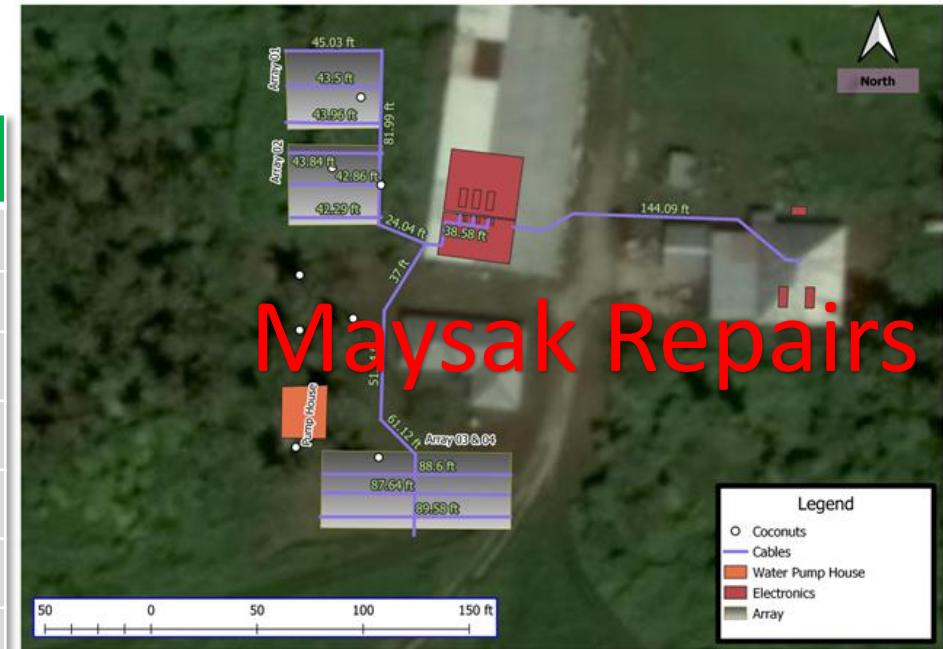
# YAP STATE PUBLIC SERVICE CORPORATION



## Yap Integrated Power Grid



Completed and Ongoing Initiatives	Value (USD million)
825 kW WEGs plus 500kWp PV plus Control	11.00
1.9 MWp PV ground/roof mounted	5.20
78 kWp 100% RE Minigrids for 2 OIs	1.80
800 kW BESS & Integration System	1.70
830 kW High Speed Diesel Generator	1.00
OI Repair 109 kWp Minigrids 2 Islands	0.05
<b>TOTAL</b>	<b>20.75</b>



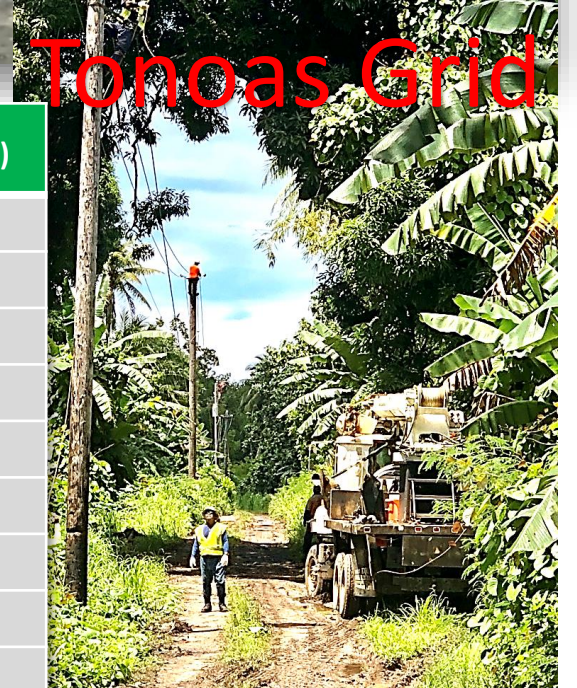
## Maysak Repairs



# CHUUK PUBLIC UTILITY CORPORATION



Figure 3. Conceptual design for Paata Island (Faichuuk) showing four independent mini-grids.



Completed and Ongoing Initiatives	Value (USD million)
2 MW PV Weno & Owners Engineer	6.30
RE Minigrids for 10 Islands (approx. 1 MW)	5.00
CHS, Power/Sewer Plant and Airport 660 kWp PV	2.00
169 kWp Udot RE Microgrid (x6)	1.70
165 kWp Hybrid Minigrad in Satowan	1.50
ADB Disaster Risk Reduction	0.83
750 kWp Solar Home Systems in Chuuk	0.75
Tonoas Distribution Grid Improvement	0.15
<b>TOTAL</b>	<b>18.23</b>

Engagement

# EMP PROJECT ACHIEVEMENTS

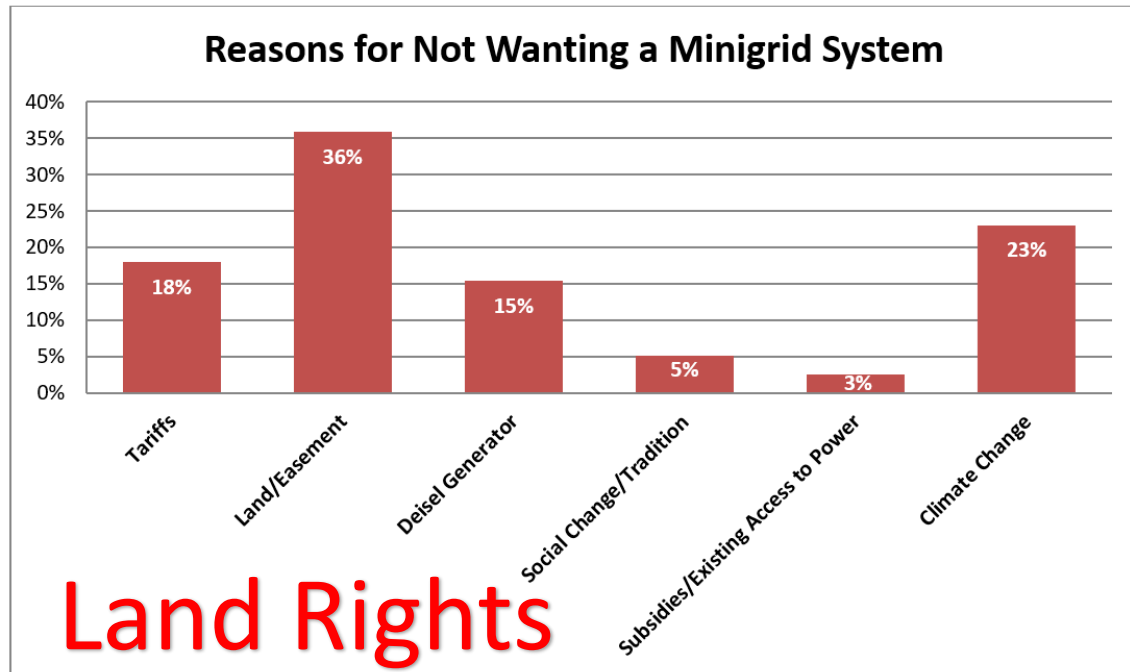
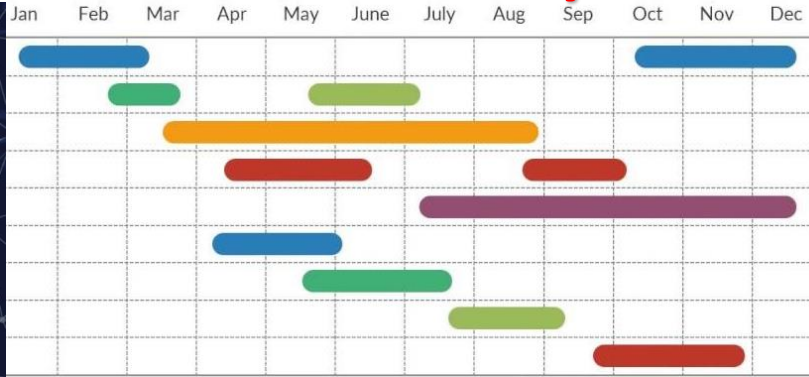
Description	Power from RE (MW)	Power from Diesel (MW)	% RE	Investment* (\$ millions)
Completed and Ongoing projects by the end of 2024.	12.05	13.73	47%	95.20
Pipeline (proposed or conceptualized projects)	3.90	0.00	100%	12.90
Total (Projects)	15.95	13.73	54%	108.10

\* Includes: BESS, SCADA, Grid Undergrounding, Spare Parts, Labor, Training, etc.



# ISSUES AND CHALLENGES

## Project Implementation Delays





# ACHIEVING ENERGY MASTER PLAN TARGETS

Energy Master Plan to 2024	Pohnpei	Chuuk	Yap	Kosrae	FSM
Power Completed/Ongoing (MW)	12.00	4.20	5.80	3.00	20.80
Power Target (MW)	12.90	5.00	3.30	4.60	25.80
<b>% Achieved</b>	<b>93%</b>	<b>84%</b>	<b>176%</b>	<b>65%</b>	<b>81%</b>

Energy Master Plan to 2024	Pohnpei	Chuuk	Yap	Kosrae	FSM
Investment Completed/Ongoing (\$MM)	35.00	18.23	22.25	19.70	94.70
Investment Target (\$MM)	43.50	43.05	19.70	17.00	123.25
<b>% Achieved</b>	<b>80%</b>	<b>42%</b>	<b>113%</b>	<b>113%</b>	<b>77%</b>