Commonwealth of the Northern Mariana Islands

Territorial Climate and Infrastructure Workshop

Multi-Source and Renewable Power Supply System Development

Commonwealth Utilities Corporation

March 2022

Presentation Snapshot

I. Introductions

II. Multi-Source and Renewable Supply Power System Development Goal

III. CUC's Existing Power Generation Systems

IV. CUC's Challenges

V. CUC's Vision for the Multi-Source and Renewable Supply Power System Development

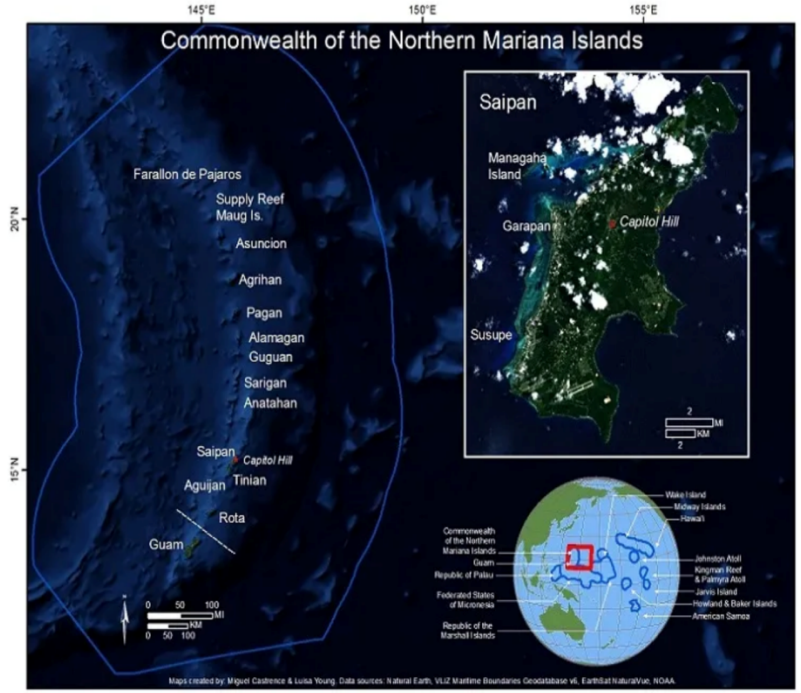
VI. Questions and Comments

Introductions

❖ Commonwealth Utilities Corporation

- ❖ The CNMI's only publicly owned utility operator, providing the islands of Saipan, Tinian, and Rota with critical Power, Water and Wastewater services.

- ❖ Gary P. Camacho, Executive Director
- ❖ Yvonne C. Ogumoro, Acting W&WW Division Manager, Environmental & Mechanical Engineer
- ❖ Richard V. Cano, Power Generation Manager



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Power Infrastructure Priority Project

- *Project, needs and strategies to support the successful implementation of projects supported by the Bipartisan Infrastructure Law (BIL)*

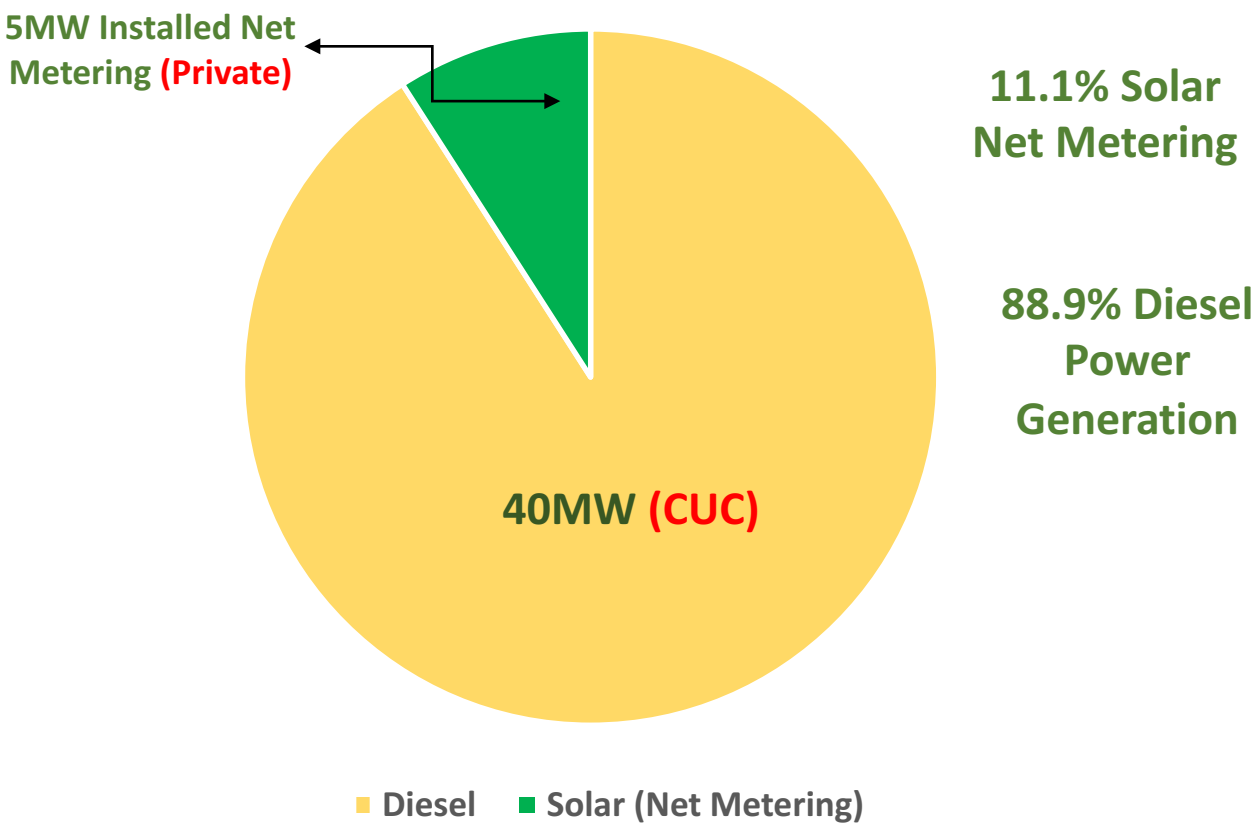
- ***CUC Multi-Source and Renewable Power Supply System Development***

- ***PRIORITY PROJECT DESCRIPTION(S):***
  - *#1:To construct a new power plant determined by the on-going integrated resource study to maximize renewable energy.*
  - *#2: To modernize current electric generation facilities through increased energy efficiencies and renewable systems integration.*

Multi-Source Power Supply Goal

- ***Achieve the Long Standard Goals that benefits the CNMI:***
- ***Cost Containment and Emission Control:***
  - ***Maximize the availability of multiple options to provide a reliable, sustainable and clean energy source for a healthy way of life for the community.***
    - ***Secure the future and support economic growth***
    - ***Improve the resiliency, safety, reliability, & availability of energy***
    - ***Reduce the threat to our environment (ocean & land)***
    - ***Support electric vehicles (EV) policy***
    - ***Support CNMI Energy Policies***
    - ***Comply with Federal Regulatory Requirements (Clean Air Act/ Clean Water Act) to reduce Carbon Emissions***
    - ***Transition away from the dependency on fossil fuel***
    - ***Improve consumer confidence***
    - ***Reduce kWh rate (improve overall cost-effectiveness of power generation)***

CUC's Power Generation and Renewable Energy Portfolio



NOTE: Public Law 15-38: 50% by Dec. 2030

CUC's Existing Power Plants

CUC's Existing Power Plants

Power Plant-1 Lower Base, Saipan					
DE #	DESIGN MW	AVAIL. MW	R. H.*	Comments	Years in Service
1	7.3	6	230,418	Operational	26.3
2	7.3	6	252,465	Operational	28.8
3	7.3	5	241,245	Derated - Emergency use only	27.5
5	8.7	0	0	Needs replacement	19.3
6	13	10	183,892	Operational	21.0
7	13	10	196,501	Operational	22.4
Totals	**56.6**	**37**	**157,778**	**Avg. R. H. of Engines at PP 1**	**24.2**

Note: R.H. is Running Hours

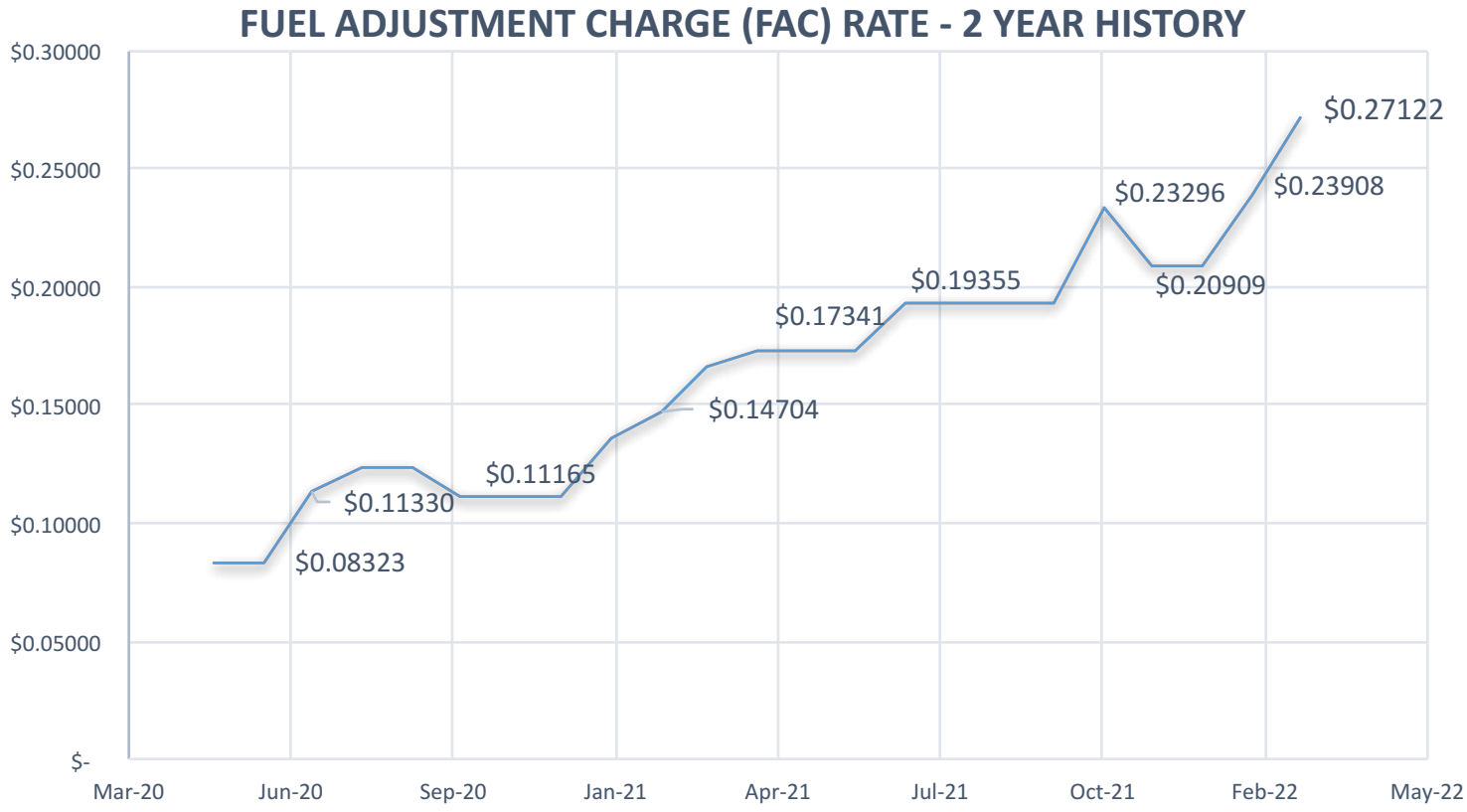
Power Plant - 2, Lower Base, Saipan (48 years old engines)				
DE #	DESIGN MW	AVAIL. MW	R. H.	Comments
2	2.5	2	5,857	Operational
4	2.5	2	2376	Operational
5	2.5	2	1321	Operational
Totals	7.5	6	Note: Data of Running Hours not accurate as meters were reset	

Power Plant - 4, Puerto Rico, Saipan (50 years and older)				
DE #	DESIGN MW	AVAIL. MW	R. H.	Comments
2	2.3	2	59,416	Operational
3	2.3	2	85,413	Operational
4	2.5	2.3	62,880	Operational
5	2.5	2.3	74,015	Operational
10	2.5	2.3	28,478	Operational
Totals	**12.1**	**10.9**	**Note: Data of Running Hours not accurate as meters were reset**	

Challenges with the Current Power Generation

- Obsolete Parts – Engine Parts & Switchgears
- Limited Supplier – MAN Energy Solution
- Proprietary Information – Mitsubishi Heavy Industry
- Increased Materials Lead Time – 6-12 months
  - Special Order of Custom Made Parts
- Increasing O&M cost ~$2.4M for major overhaul and cost of operations
- Aged equipment and facility structure
- Reduced efficiency and reliability due to old technology
- De-rated generating units
- Labor intensive operation and maintenance
- Unable to meet current environmental standards
- Threat of System Loss

Fuel Adjustment Charges



Priority #1: New Power Plant

- 80MW of Dual Fuel Electric Generation (5 units–10MW, 3 units-7MW, 9MW Solar PV)
  - All engines with SCADA technology
  - Electric Grid Outage Maintenance Software
  - New Plant Structure, Approx. 2 Hectare Footprint
  - Reinforced steel for wall paneling
  - Overhead crane (50-ton with secondar 5-ton crane)
  - Reverse Osmosis System
  - Oil Recovery System
  - Maintenance Shop
  - New Fuel Tank System
  - 9MW Solar PV with Battery Storage

  - COST: $150 MILLION

Summary of Reasons for a New Power Plant

1. Aged Equipment/Limited Life Span
2. Limited Technology
3. High Operating Cost
4. Environmental Threat
5. Existing plant is limiting renewable penetration

Facility had suffered damages from past major typhoons and resulting to:

- ***Corrosion***
- ***Inefficiencies***
- ***Equipment Damages***

Priority #2:

To modernize current electric generation facilities through increased energy efficiencies and renewable systems integration

- ***Acquisition of One (2) Dual Fuel Hybrid 10MW Generator: Turnkey (Engineering, Delivery & Installation, and Commissioning)***
- ***Foundation Assessment & Upgrade***
- ***Interconnection Systems Upgrade for Solar Integration***
- ***2 – 5MW Solar PV Farm with 2MW Battery Storage***
- ***1MW = 5 acres (101K square meters)***
- ***Human Resource Infrastructure (Personnel for New Renewable Division, Training)***

- ***COST: $40 MILLION***

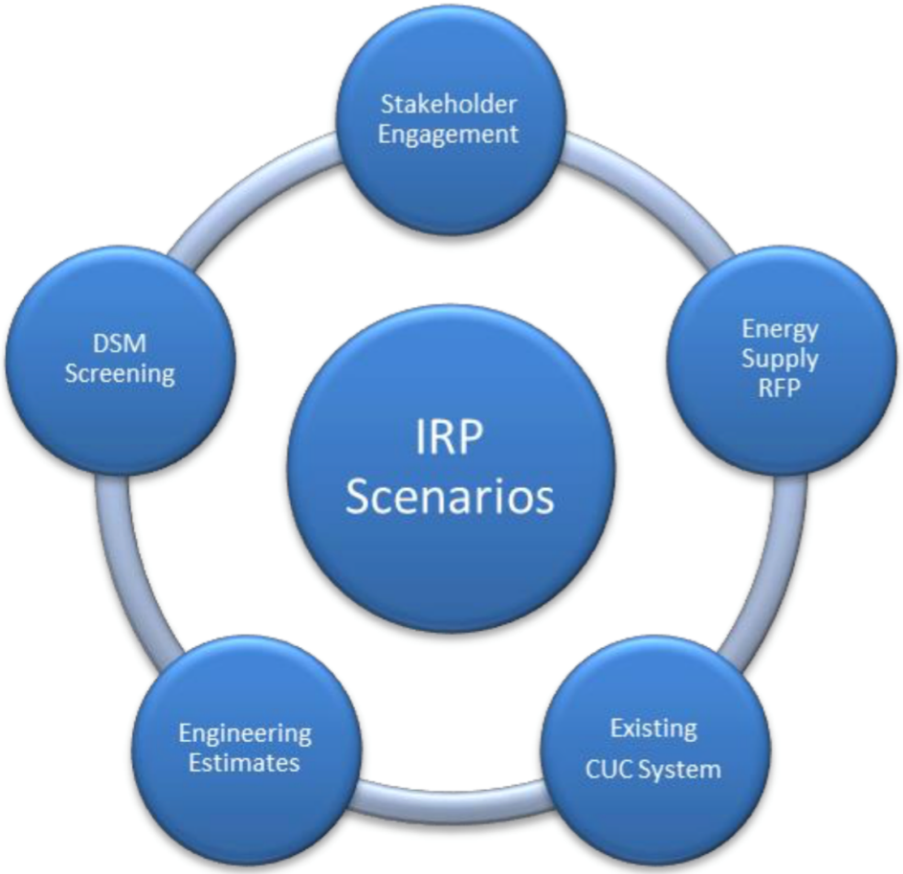
Summary of Reasons for Plant Modernizing + Solar Farm

- ***Reduce Current Challenges:*** *Obsolete Parts, Limited Supplier – MAN Energy Solution; Increased Materials Lead Time – 6-12 months for Special Order of Custom Made Parts; Increasing O&M cost ~$2.4M for major overhaul and cost of operations; Aged equipment and facility structure; Reduced efficiency and reliability due to old technology; Unable to meet current environmental standards*
- ***Increase Reliability on the Grid (Sustainable Power Generation)***
- ***Increased Electric Efficiency***
- ***Reduce Carbon Footprint***
- ***Reduce Rate for Kilowatt per Hour by $0.04 to $0.05 per kilowatt per hour.***

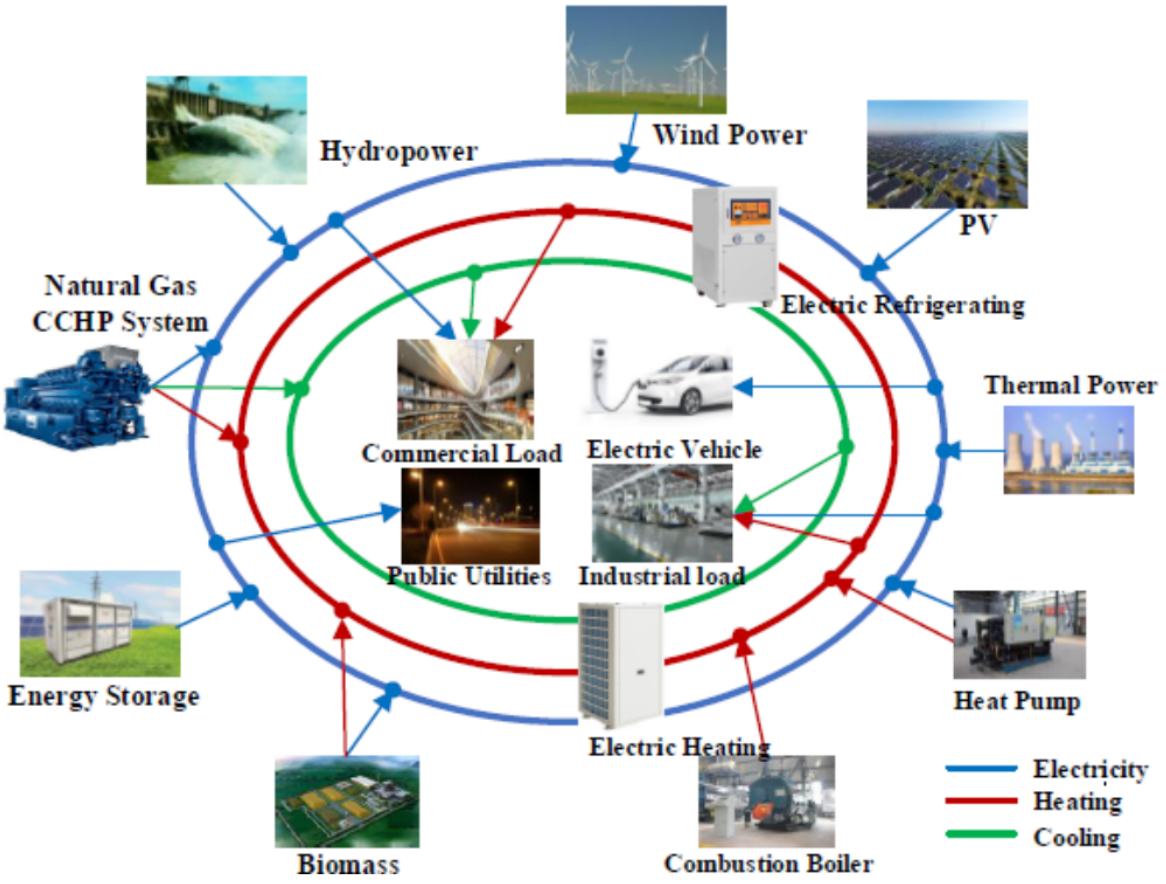
Ongoing Projects-Progressive Developments

- Solar Feasibility Study and Design for Saipan and Rota (OIA, 2020)
- Solar PV Engineer Professional (OIA, 2020)
- SCADA for Power Plant 1 (OIA, 2020)
- 2.5MW Solar Farm Design for Saipan (OIA, 2021)
- Power Distribution Automation for Saipan (OIA, 2021)
- Integrated Resource Plan Update, CNMI (CDBG,2021)

CUC Integrated Resource Plan Update



Multi-Source Renewable Power Supply Systems Development



Questions and Comments

Si Yu'us Ma'ase, Olomwaay, Mahalo and Thank you!