



Nauru Utilities Corporation

Half-Yearly Report 1 July 2022 to
31 December 2022

Hon. Wawani Dowiyogo, Minister for Utilities

Hon. Martin Hunt, Minister for Finance

Dear Ministers,

On behalf of Nauru Utilities Corporation, we are pleased to present to you the corporation's half-yearly report for the period July to December 2022, in accordance with the provisions of section 77 of the Public Enterprise Act 2019.

Yours sincerely

Abraham Aremwa Chair & Acting Chief Executive Officer

1st March 2023

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Statement by the Chairman of the Board of Directors

Tubwa Kor

I am pleased to present this half-yearly report for Nauru Utilities Corporation.

Given its challenges, NUC continue to operate with awareness to safety and work culture over this period. The move towards customer focus and work culture is progressing, with management conscious of its targeted performance indicators.

The move towards improved efficiencies and reliability and security of electricity and water supply is central to NUC. Prudent management decisions and a range of sensible efficiency targets in both our operational expenditure and corporate overheads, highlights areas of operational improvement ensuring sufficient revenue to continue to operate the network in a safe and reliable manner.

In closing I would like to thank my fellow Board members for their valuable contributions to the Nauru Utilities Corporation and the community which we serve. On behalf of the Board of Directors, I would like to thank the Government of the Republic of Nauru for their support and especially the Minister for Utilities, the Honourable Wawani Dowiyogo MP.

Similarly, I must also thank all NUC staff for their continued dedication to our customers and the Nauru community.

Abraham Aremwa
Chairman of the Board of Directors

Chief Executive's Report

The Half year report for 2022-23 financial year provides an overview of NUC's primary service obligation, that is, to generate/acquire, distribute, market and otherwise supply electricity and water to the people of Nauru. These services cover government and its instrumentalities, commercial, industrial and residential household.

The first 6 months, that is, from 1st July to December 2022 comes with its challenges. NUC's financial performance for the period reflected an unfavourable outcome attributed, for the most part, to general increases in fuel prices. Diesel fuel prices have steadily increased thus increasing our operating costs of energy generation as demand increases. Therefore, NUC's revenue was unable to cover its operating costs including depreciation.

In terms of electricity generation, the opening of the period saw the G2 M.A.N engine suffering catastrophic failure. This generator engine is important to maintaining N-2 security of supply with base load thermal generation. With the specialist and parts flown from India, this generator was back in service in December 2022. The electricity generation sold in this period was lower compared to last half year reporting period.

Operation and maintenance activities on our generation and distribution network continued to be met to meet the demand each month for energy. A spike in distribution network interruptions due to pole top wooden crossarm fires. Pollution and salts including high humidity has led to increased incidents, however NUC has invested in new polymer crossarms and commenced its replacement program to mitigate further interruptions. NUC continues to carry out preventive maintenance on the network.

About 16% of its current energy demand is sourced from renewable energy - solar Photovoltaic (PV) installations. The Government of Nauru has a target to increase the annual energy renewable penetration within Nauru to 50%. To date, the project has reached 58%. Once commissioned, the benefits entails, not only greener energy but fuel offsets.

In terms of water production and delivery, The existing RO plant continues to meet the demand for water, where demand during the 6-month period remained steady at around 1.1 to 1.2 ML per day. This was mainly due to the prolonged drought which was forecasted to last well into the second half of the year 2023. The two new RO's to be installed at the Aiwo Power Station site will increase water production installed capacity to 5.70 ML/day and achieve N-2 security of supply for water.

In terms of man power, Covid and its corresponding lockdown has had some bearings on NUC work output performance whereby 40% of workforce had to be isolated in compliance to Nauru Task Force mandatory requirements. On the same note, Management paid an equivalence of 7,472 hours of sick leave during this period.

Abraham Aremwa
A/Chief Executive Officer

This Report

The Purpose of this Report

This report satisfies Nauru Utilities Corporation's obligations within the Public Enterprise Act 2019, where section 77 stipulates that a public enterprise must submit to the Responsible Minister and Accountable Minister a half-yearly report of the operations of the public enterprise for the first half of the financial year to which it relates.

Therefore, the management and the board of directors of Nauru Utilities Corporation are required to submit its half-yearly report to the Responsible Minister of Utilities Corporation and Accountable Minister no later than 2 months after the end of the first half of the financial year.

This report outlines NUC's progress in reference to its statement of corporate intent for the current financial year 2022-2023 and includes other matters that the Responsible Minister and the Accountable Minister has directed NUC to include.

Objective of this Report

The objective of this report is to inform the Government of Nauru, stakeholders, and our customers on information pertaining to NUC's operation such as:

- NUC's primary services and responsibilities.
- Important activities for the July to December period of 2022 financial year, highlighting major projects, key achievements and outcomes, as they align with the strategic objectives of the corporation contained in NUC's 2021-2025 Strategic Plan.
- Financial management and performance of the corporation during the period July to December 2022, in compliance to the Public Enterprise Act 2019.

Nauru Utilities Corporation (NUC) provides services to the community of Nauru across the entire water and electricity supply chains, in addition to our legislative obligations as the power system controller and water operator.

Our Business

Business Overview



WATER PRODUCTION

Produced: 181,157,571 litres produced



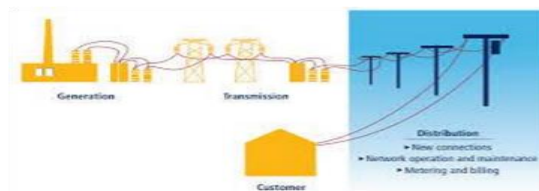
WATER STORAGE

Storage: 5,593,000 Litres in Stock



WATER DESPATCH & DELIVERY

Delivered: 134,347,000 litres delivered



ELECTRICITY GENERATION

Diesel Generation (Sold): 17,947,129 kWh

Renewable Energy Generation: 1,381,993 kWh



ELECTRICITY CUSTOMERS

4280 Customers comprising:

- Domestic: 3755**
- Commercial: 439**
- Industrial: 31**
- Government: 55**



WATER CUSTOMERS

2094 customers comprising:

- Domestic: 1982**
- Commercial: 25**
- Industrial: 30**
- Government: 57**

Vision

“Makur Dogin Naoero”

Makur Dogin Naoero meaning “Work for Nauru” appeals to the heart of employees, to give meaning to their work and to inspire exceptional performance. In order to be a high performing organisation, one that delivers exceptional service to the people of Nauru our vision encapsulates that our people are working for their fellow Nauruans, for their families, especially their children, grandchildren and for future generations.

Mission

In line with the vision, the mission of the NUC is: For Nauru we will Achieve, with a United effort and doing things Right first time, Utopia: providing safe, reliable, affordable, secure and sustainable electricity and water supply.

Core Values

In pursuit of its mission, NUC continues to be guided by the following six (6) core values - defining its desired corporate culture:

Core Values	Description
Impartiality	NUC staff shall treat all customers, stakeholders and each other with fairness. NUC provides safe, reliable, affordable and sustainable electricity and water supply to its customers
Morality	NUC staff shall ensure they uphold standards of right and good conduct
Professionalism	NUC staff shall perform their duties with the highest degree of competence and skills
Accountability	NUC staff shall perform their duties in a manner that shows readiness to take full accountability and responsibility for their actions.
Consistency	NUC staff shall ensure uniformity, predictability and coherence in accordance with our Code of Conduct and Core Values.
Transparency	NUC staff shall operate in a fair and open manner and without prejudice in delivering safe, reliable, affordable and sustainable electricity and water services.

Motto

In line with its core values – NUC uses the following motto to rally employees, consumers, suppliers, and stakeholders, in general, behind its vision and mission:

“Safe reliable, affordable and sustainable services with positive IMPACT”

Business Objectives and Implementation Plan

During the half year period from 1 July to 31 December 2022, NUC through its Strategic and Annual Work Plan 2022 pursued the following five (5) Business Objectives which includes:

- Delivering Safe, Reliable, Affordable and Sustainable Electricity and Water Services
 - Communicating and Engaging with Customers and Stakeholders
 - Customer oriented deliveries
 - A High Performing Organization
- 🚧 Human Resources: NUC continued to develop and up-skill leaders and staff to ensure enhanced operational safety, improved operational performance and customer service outcomes.
- 🚧 Environment: NUC ensured sustainable use and management of the environment and natural resources for the benefit of present and future generations.
- 🚧 Safety: An integral part of delivering electricity and water services to our customers was ensuring that it is carried out in a safe and sustainable way. The health, safety and well-being of our staff and customers are paramount.

NUC staff shall continuously identify hazards, report incidents and learn from mistakes, making changes to operations to ensure safety of personnel and the public. It will become a way of life.

- 🚧 Operational Performance: Ensuring a safe reliable, affordable and sustainable provision of electricity and water services in Nauru is a central objective of Government. An efficient electricity and water utility play a primary role in ensuring this objective is met

NUC has adopted a range of performance measures and indicators to assess its operational performance progress.

- Core indicators such as operating cost per connection;
- Performance scores based on production or cost estimates
- Benchmarking
- Customer survey benchmarking by identifying customer perceptions.

The half-yearly report underpins the strategic objectives and translates them into key outputs and outcomes. Detailed operational activity and financial performance schedule have been presented in this report which includes:

- Summary of progress of Work Plan 2022-23 (Appendix 1)
- Current Electricity and Water Charges 2022-23 (Appendix 2)
- Financial Projections 2022-2023 (Appendix)

Nauru Utilities Corporation Board of Directors

Chairman
Mr Abraham Aremwa



Deputy Chairman
Mr Leo Scotty



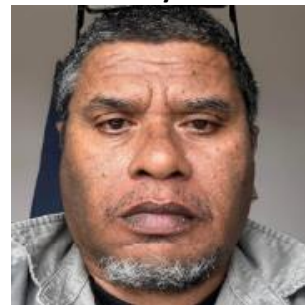
Director
Mr John Tagamoun



Director
Mr Ruswell Engar



Director
Mr Rocky Olsson



The Nauru Utilities Corporation (NUC) was established under the Nauru Utilities Act 2011 (the Act) and commenced operations on 1 August 2011. NUC succeeded the Nauru Utilities Authority. The Act sets out the functions of the Corporation with respect to electricity and water services.

In relation to electricity our functions are:

- a) to generate, acquire, exchange, transport, distribute, market and otherwise supply electricity
- b) to undertake, maintain and operate any works, system, facilities, apparatus or equipment required for any function mentioned in paragraph (a); and
- c) to do anything that the Corporation determines to be conducive or incidental
- d) to the performance of a function mentioned in paragraph (a) or (b).

In relation to water our functions are:

- a) to acquire, store, treat, distribute, market and otherwise supply water for any purpose;
- b) to undertake, maintain and operate any works, system, facilities, apparatus or equipment required for any purpose mentioned in paragraph (a); and
- c) to do anything that the Corporation determines to be conducive or incidental to the performance of a function mentioned in paragraph (a) or (b).

Nauru Utilities Corporation Executive Management Group

A/CEO

Mr Abraham Aremwa



GMCS

Mr Anthony Dimapilis



CFC

Mr Naibuka Sigasiganavanua



GMG

Mr Ken Blake



GMN

Mr Jonpeal Rodiben



GMWO

Mr Mark Hiram



Nauru Utilities Corporation Senior Management Group

MPG
Jones Giouba



MPPM
Mr Apenisa Manuduitagi



MSC
Mr Andre Adun



MPD
Mr Taumanu Haulangi



Accountant
Mrs Migail Tatum



MCS
Mrs Elda Harris



MICT
Mr Deakin Temaki



MPSC
Mr Haseldon Buraman



MSSC
Ms Meshah Denuga

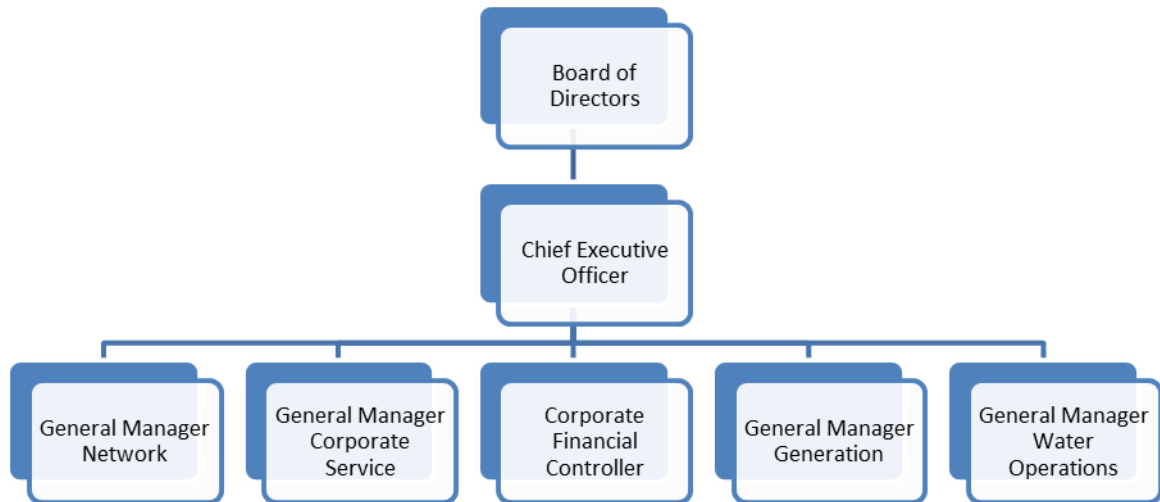


MHR
Mrs Sinderina Adeang



Organisational Structure

Executive Leadership Team (Tier 1)



Management Structure (Tier 2)



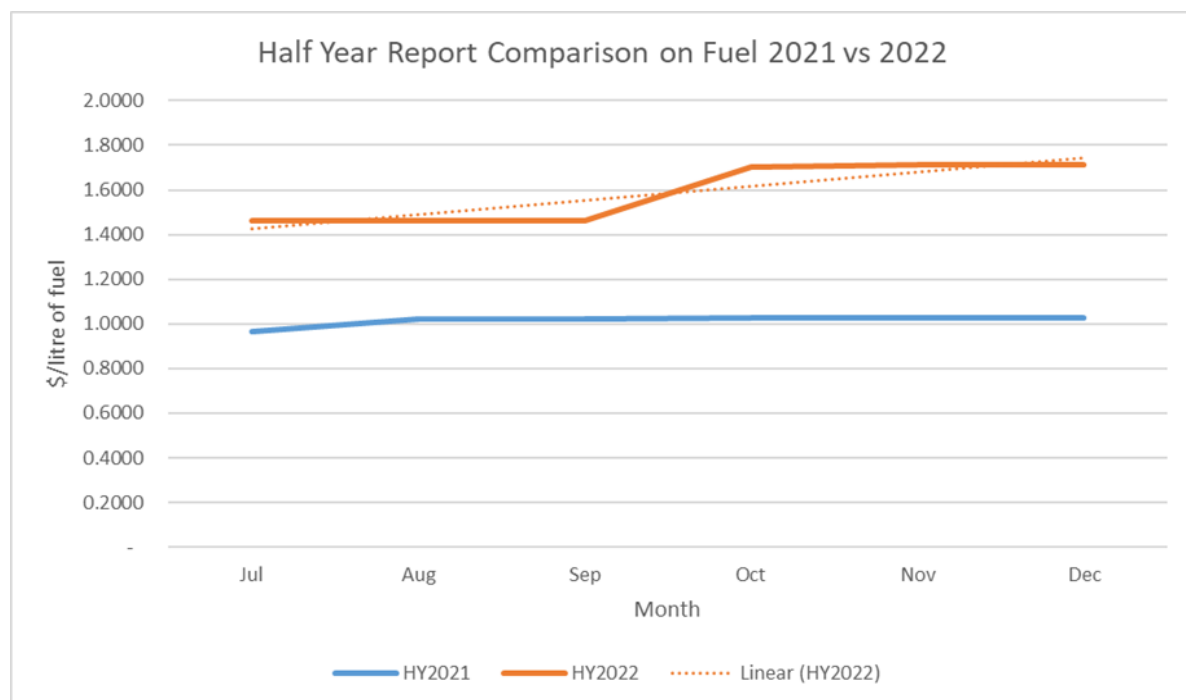
External Environment Overview

The COVID pandemic and the war in Europe were constantly monitored throughout the (6) months period. This half-yearly report signifies the impact on both of these events toward the organisation's performance.

According to the Pacific Island Times and Asian Development Outlook, the Pacific island economies are expected to gradually bounce back with a growth rate projected to resume at an average of 3.9% in 2022 and 5.4% in 2023.

However, these projections are likely to be counterbalanced due to the war that has emerged between Russia and Ukraine early February 2022. Following Russia's invasion of the Ukraine, oil prices have jumped USD 30/barrel (increase is equivalent to around Australian 26 cents per litre). These price rises are occurring across the world as international petroleum markets are connected by the movement of petroleum by sea. Nauru like the rest of the Pacific and world have experienced volatility in fuel prices, thus, the impact towards NUC's operations is quite significant, unless the conflict is resolved.

To put this into perspective, below is a graph that shows the general increase in the price of fuel per litre on island that NUC meets in order to generate electricity. The fuel price is inclusive of fees and charges which amount to 8.5446% on every dollar of litre purchased.



From July 2022 to December 2022, NUC has purchased 5,275,140 litres of fuel at total price of \$8,309,859.33. That's an average cost of \$1.58 per litre of diesel fuel. Same period prior year, NUC purchased 5,447,700 litres of fuel at total price of \$5,532,833.91. That's an average cost of \$1.02. That means, the average price one year ago has gone up by \$0.56/litre or 54.4%.

Achievements against Key Performance Targets

Workplace Health and Safety

It is one of NUC's obligations to promote health and safety within the working area. This section outlines the indicator of our progress on that journey.

There were several matters raised during the months of July – December 2022 where all has been rectified. The major accident occurred on July where system control operator was exposed to high temperature burst from one of the engine's radiator lid. Investigation concludes that it was caused by negligence and was addressed.

The following table summarises the number of hazards identified, actioned including non-compliances, and cases noted during the period 1 July to 31 December 2022. The table depicts eight (8) reported cases with no indication of operational disruptions as highlighted in "hours worked" column.

Month	Hours Worked	No. of Hazards	Accidents Reported	Incidents Reported	Near Miss Reported	Non Compliance
July	TBA	0	1	0	0	0
August	26,880	3	0	1	0	0
September	TBA	4	0	0	0	0
October	28,160	0	2	1	0	0
November	28,400	0	1	1	1	0
December	28,400	0	0	0	0	0
		7	4	3	1	0

COVID Outbreak Progressive Report

As the month of June 2022 ended, Nauru reported its first national COVID outbreak within the community. During the first week of the outbreak, there were 261 cases in quarantine facilities including children. The high infectious rate led to stricter measures whereas, food stalls and street vendors can sell food, but people are asked to wear masks and gloves and maintain a social distance of at least 1.5 meters from each other. Car wash services have been labelled non-essential and have been asked to temporarily suspend business operations where other establishments that are deemed possible to adopt a work from home policy.

Within NUC's context, a COVID Response Plan was triggered at level (3) to ensure operational sustainability is maintained during the outbreak. At the peak, (64) NUC employees are tested positive and were under mandatory lockdown. During the outbreak, NUC was operating at capacity 60% available employees where a massive 7472 hours of Sick Leave (SL) was recorded while the Labour Worked Hour's Productivity (LWHP) dropped by 7,357 hours compared to June 2022. The situation gradually improved whereas, the sick leave hours decreased by 92% on December 2022 compared from 1 July's data.

People and Culture

Our culture is a vital and unique part of our organization. It's what makes people decide to join our team and is the biggest reason employees choose to stay or leave. It's the key to gaining (and maintaining) a truly high performing organization—one that makes work a place people want to be. NUC's desired corporate culture is one characterised by autonomy, where employees are empowered to innovate and work autonomously, without micro managing or hand-holding where staff have ownership in their work. Secondly, NUC's corporate culture is one that values outputs (the quality of work produced) rather than inputs (the number of hours logged).

The number of employees as at 31 December 2022 was 183 (including board members), an increase of 11% compared from 2021 data. However, expatriate numbers have dropped by 10% compared to 2021 report.

The employee profile to 31 December 2022 compared to the 2021 financial year is shown below.

Category	2021		As at December 2022	
	Number	Percentage	Number	Percentage
Male	137	80%	139	79%
Female	33	20%	37	20%
Expatriate	13	9%	7	3%
Total Number of Staffs	166	100%	183	100%

Gender equality and Social Inclusion

In response to ADB's Social Safeguard initiative, the management of NUC with the approval of the board has adopted the Nauru Utilities Corporation Gender Equality Strategy and Action Plan 2022.

The Nauru Utilities Corporation Gender Equality Strategy and Action Plan 2022, under the Gender Equality Committee's (GEC) supervision provides a framework to assist NUC in developing and implementing effective strategies around workplace culture, leadership and employment practices to improve gender equality across the whole of the organisation. NUC's gender equality strategy outlines our vision for combatting gender inequality and holds the organisation accountable by setting measurable objectives for progress.

The table below depicts NUC's gender coverage as at December 2022:

Organizational Structure Gender Coverage					
Level	No. Employees	Men	Coverage	Women	Coverage
Board of Directors	5	5	100%	0	0%
Executive Management	7	5	71%	2	29%
Senior Managers	14	10	70%	4	30%
Team Leaders	24	21	88%	3	13%
Technical	103	100	97%	3	3%
Administrative/Corporate	30	5	17%	25	83%
Overall	183	139	77%	37	21%

The notion of traditional and non-traditional coverage within NUC's context refers to occupations relating from typical office jobs to Science, Technology, Engineering and Mathematics (STEM) disciplines in electrical and mechanical career. The table below illustrates a low coverage for non – traditional occupations where (1) female is employed as an electrician, (2) as ICT technician and (1) as heavy truck driver for Water Despatch. The Gender Equality Strategy and Action Plan 2022 anticipate increasing women participation to 40% by the end of 2025.

Occupational Gender Coverage For Women				
No. Employees	Traditional	Coverage	Non-Traditional	Coverage
37	33	89%	4	11%

Capacity Building

Our people are an integral part of NUC's achievements. They are our key to our successes and enabling the delivery of electricity and water services to customers in a safe, reliable, affordable and secure way.

The development of our staff is fundamental to NUC's objective of becoming a high performing organisation as a whole. Our staff development and capacity building activities are focused on improving employee performance. Our training and development plans focus on motivating employees by making them feel valued, and is the responsibility given to all managers.

Capacity building is a critical component of our strategic and annual work program as it spearheads Nauru National Sustainable Development Strategy in addition ensures long term operational sustainability within NUC.

The types of training conducted during the half-year period to 31 December 2022 were:

Type of Training	Number of Participants
Automotive TVET Cert II	1
Basic Computing	3
Welding and Fabrication TVET Cert II	1
Electro-Technology TVET Cert II	3

Staff underwent compulsory industry specific on the job training at TVET and USP institution varies from Automotive, Basic Computing, Welding and Fabrication, and Electro-Technology where eight participants were recorded.

Five employees are scheduled to depart for long term training whilst one is currently in Australia pursuing a Bachelor's Degree in Mechanical Engineering

Number of Employee	Study Program	Institution/Sponsor
1	Diploma in Accounting	University South Pacific, Fiji
1	Bachelor's Degree (Public Administration and Management)	University South Pacific, Fiji
1	Bachelor's Degree (Mechanical Engineering)	Queensland University of

		Technology/AUSAID
1	Diploma in Electrical Engineering	Fiji National University/AUSAID
2	Certificate IV in Electrical Engineering	Fiji National University

Productivity

The organisation's performance is assessed by reviewing and managing a number of key performance indicators. These include Absent Without Leave (AWOL), Leave Without Pay (LWOP), All Leaves taken (Recreational, Special, Sick, Official, Maternity, Long Service) Attendance, Labour Worked Hours Productive (LWHP), and Labour Paid Hours Productive (LPHP) to manage overtime.

The following table below summarizes the organisations KPI's for the period 1 July to 31 December 2022 in comparison with the 2021 report.

Month	NUMBER OF EMPLOYEES			LWOP HOURS			AWOL HOURS		
	2021	2022	(%) Variance	2021	2022	(%) Variance	2021	2022	(%) Variance
JULY	162	170	0.05	376	744	0.49	1442	1817	0.20
AUG	161	164	0.02	168	1084	0.84	1638	2095	0.21
SEPT	155	173	0.10	172	348	0.50	1351	2094	0.35
OCT	161	176	0.08	1616	556	-0.65	1395	2972	0.53
NOV	167	177	0.05	720	908	0.20	1517	2292	0.33
DEC	166	183	0.09	568	1090	0.47	1509	2165	0.30
			0.06			0.31			0.32

The table above depicts an increase on the numbers of employees by 6% compared from last year. Leave without Pay (LWOP) has also increased by 31% including Absent Without Official Leave (AWOL) has increased by 32% on average of 6 months compared to last year's data.

Month	REC-LEAVE HOURS			SPECIAL LEAVE HOURS			SICK LEAVE HOURS		
	2021	2022	(%) Variance	2021	2022	(%) Variance	2021	2022	(%) Variance
JULY	1224	1622	0.24	926	218	-0.76	436	7472	0.94
AUG	1608	2136	0.24	1040	188	-0.81	672	1036	0.35
SEPT	2040	911	-0.55	1268	204	-0.83	762	3750	0.79
OCT	2692	1328	-0.50	674	320	-0.52	968	773	-0.20
NOV	2716	2164	-0.20	480	456	-0.05	640	640	0.00
DEC	2956	2784	-0.05	944	404	0.57	788	536	-0.31
			-0.14			-0.40			0.26

The table above shows a drastic increase in paid sick leave of 7472 hours due to the COVID outbreak. In comparison, the report is showing a 94% increase from last year's data in paid sick leave. Both rec-leave and special leave hours have decreased at the same time last year.

Month	LWHP HOURS			LPHP HOURS			OVERTIME %		
	2021	2022	(%) Variance	2021	2022	(%) Variance	2021	2022	(%) Variance
JULY	27807	19871	-0.28	38197	41367	0.07	27	52	0.48
AUG	26824	25274	-0.05	37640	35819	-0.04	29	29	0.00
SEPT	24954	11589	-0.53	36696	26074	-0.28	32	56	0.42
OCT	38232	27505	-0.28	52812	36032	-0.31	28	24	-0.14
NOV	24970	25863	0.03	34906	36899	0.05	28	30	0.06
DEC	23676	25094	0.05	36125	35576	-0.01	34	29	-0.14
			-0.18			-0.09			0.11

The table above illustrates that Labour Work Hours Productivity (LWHP) has decreased by 18%, with Labour Paid Hours Productivity (LPHP) dropped by 9% on average of six months. However, the overtime (OT) witnessed an increased by 11% on average compared from 1 July to 31 December 2021 report.

Information and Communication Technology (ICT)

The management of corporate information, both paper and electronic form is an important function that NUC is required to undertake for it to meet both legal and operational requirements.

ICT functionality has performed well but with minor setback during the 6-month period to December 2022. The impact of COVID has pushed most of key activities behind schedule with includes

- The implementation of NUC's Disaster Recovery Site has been pushed to Q4 of 2022-23 due to pending works at the Solar Project site
- Revitalizing the RT Radio Transmission will begin at next 23/24 Budget
- Installed new UPS in control room to provide backup power to the SACDA system and screen during blackouts
- STS TID Rollover for the new Suprima Software Upgrade – this remains an on-going program of work and is at 67% complete
- Installation and maintenance of CCTV at NUC locations to improve and maintain
- Safety, security and surveillance monitoring. This remains an ongoing program of maintenance works

The ICT Helpdesk received a total of 237 requests for the period July to December 2022 with an average of 100 requests per month. The requests ranged from issues relating to hardware (pc's/printers/servers) and software including network related faults. All requests were attended to with (9) outstanding open tickets for the period.

2022	Jul	Aug	Sept	Oct	Nov	Dec
Staff Complaints	15	45	44	45	43	45
ICT Tickets Resolved	15	43	43	42	42	43
ICT Tickets Unresolved	0	2	1	3	1	2

Key services availability was satisfactory for the period with minimal down time.

SMS Power Top-up for the period NUC received a total of 119,150 (a 13% decrease from the previous period) averaging around 19,858 SMSs per month.

Month	Total SMS
July	22300
August	23349
September	22080
October	18524
November	13689
December	19208

The NUC network for the Main Power Station Office, Water Unit and Power Station performed at 100% availability during the period. All servers and systems were operating normally including the network related equipment such as NUC’s core routers and switches including wireless access.

Electricity Generation

Thermal Generation

The current installation of diesel generation capacity adequately meets the maximum demand with an N-1 security.

This is achieved with the installation and commissioning of G4 Ruston medium speed generator and G8 Cummins high-speed diesel generator providing the required capacity to supply the maximum demand of the system with any loss on one of the two largest M.A.N engine generators.

The current diesel generating capacity status and availability is summarised in the following table.

GENERATION DATA	STATION																				
	INSIDE POWER STATION (MEDIUM & HIGH SPEED ENGINES)								OUTSIDE HIGH SPEED ENGINES					STANDBY ENGINES AT ESSENTIAL SERVICES							
SET NUMBER	G1	G2	G3	G4	G6	G7B	G8	G10	G2A	G2B	G3	G5	GON	MENENG	AIRPORT	SICAMP	RON HOSPITAL		PRISON 1	PRISON 2	
ENGINE MODEL	Ruston	MAN	MAN	Ruston	Ruston	Cummins	Cummins	Cummins	Cummins	Cummins	Cummins	Cummins	Cummins	Cummins	Cummins	Cummins	Cummins	Caterpillar	Caterpillar	Caterpillar	Caterpillar
INSTALLED CAPACITY (kw)	2400	2850	2850	2600	2400	1000	1000	1000	1000	1000	1000	1000	500	500	500	320	500	500	100	100	
RATED CAPACITY (kw)	2000	2000	2300	2200	1800	750	750	750	750	750	750	750	400	400	400	280	400	400	80	80	

The current available capacity for high-speed diesel generators is 4.3 MW. The current available capacity of medium speed diesel generators is 7.9 MW.

Failure of G2 MAN Engine

In July 2022, the G2 M.A.N engine suffered a catastrophic failure as a result of a pedestal bearing high temperature malfunction leading to a significant damage on the Non-Drive End Bearing.

In August 2022, NUC management sought to engage the services of TDPS Alternator manufacturer to undertake the appropriate repairs and upgrade of the faulty Non-drive end pedestal bearing with over-all cost of \$124,508.00 that included parts, freights and deputation of TDPS service engineer.

In December 2022, with delays on pedestal bearing fabrication G2 M.A.N engine finally returned to service. The importance of G2 M.A.N engine slightly maintained the current level of security and reliability of supply for Nauru thus enabling NUC to maintain N-2 security of supply with base load thermal generation while the demand growth continues over this period.

NUC continues to anticipate significant growth in electricity demand in this financial year and until 2025.

The electricity demand forecast stipulates at least 5% increase is expected every year that are mainly incorporated from grid extensions to enable new customer connections. The Ronphos new Kiln (Drier Feeder), Ports Development Project (Ports Feeder), 2 x 1ML RO plants are additional demands expected in the grid by Q1 and Q2 of 2023.

While the 6MW Solar Development Project is planned for commissioning and operation in late 2023 it will provide alternative energy source from renewable energy production, however, it will not provide base load generation security of supply or voltage stability for the grid. The proposed battery energy storage system (BESS) incorporated in the 6 MW Solar Project Development is designed only to provide capacity for half-hour, depending on load and discharge rates.

NUC requires maintaining the thermal generation to an optimum level to meet the reliable supply of electricity to the national grid during the short and long-term demand growth.

Thermal Generation works that was completed this period included:

- The commissioning of G4 Ruston diesel generator in late November with an installed capacity of 2.6MW providing a continuous available capacity at 2.2MW.
- The commissioning of G8 Cummins diesel generator in early September with an installed capacity of 1MW providing continuous available capacity at 700-800KW depending on demand and efficiency gains.
- G3 M.A.N completed pedestal bearing rectification works in early December after a delay in fabrication of main pedestal bearing from manufacturer and the deputation of TDPS alternator service engineer.

Ongoing maintenance to all high-speed generators and the medium speed MAN engines was also carried out during this period with an average maintenance compliance rate at 92.2% for the first 6 months July to December 2022.

The recent commissioning of G4 Ruston diesel generator and G8 Cummins diesel generator combined with the complete rectification works on G3 M.A.N Non-Drive End pedestal bearing has enable NUC to achieve sufficient generation capacity to meet maximum demand with N-2 security.

This saw NUC achieve one of its business strategies of providing sufficient generation capacity to supply the maximum demand of the system with loss to any of the two largest M.A.N diesel generators.

The major overhaul works on G6 Ruston diesel generator continuous to progress slowly as anticipated with 80% mechanical works has been achieved this period while the remaining 20% which incorporates complete installation of diode plate and PLC on engine GCP remains.

Upgrade works on G1 Ruston diesel generator is also progressing slowly with pipe works for engine cooling system from engine to radiator and vice versa is continuing gradually in this period while the next 6 months would see G1 commence works on the exhaust system.

The Ports 11kV supply for this period proceeded with the completion of the Ports feeder termination at the Aiwo power station which encompassed the installation of Ports Feeder RMU in the 11kv room. Completion of the connection at the New Ports is dependent on the progress of the road upgrade at NUC and RonPhos area and including the Ports development.

Works at the 6 MW solar development project continue to advance sluggishly with an abundance of work scopes remains unaccomplished during this period with statement now circulating that the project might not be in full operation by early 2023. This delay would have significant impact on NUC fuel budget as it was forecasted that the commissioning of the 6MW solar farm would decrease operation of diesel generator during the day consequently reducing Power Station diesel consumption.

Several major projects in power generation is scheduled to begin Q2 of 2023 this includes the major overhaul to G2 M.A.N diesel generator at 32,000hrs with running hours recorded at 30,400hrs ending December 2022.

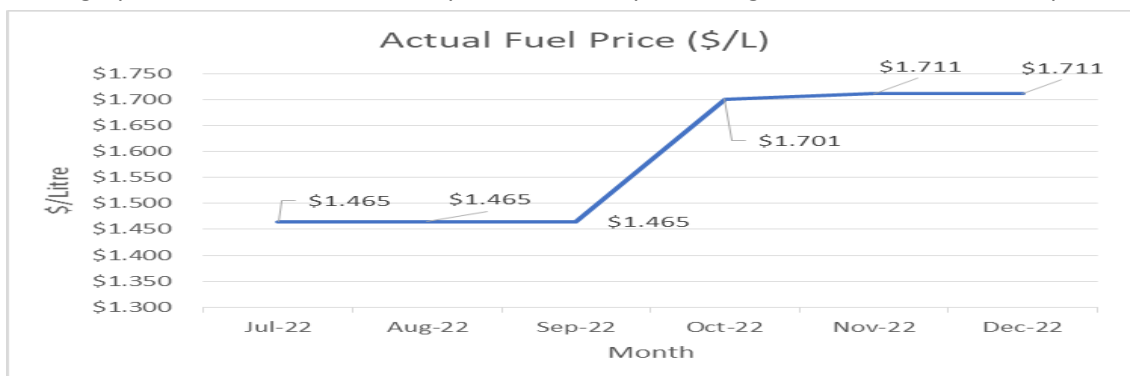
Diesel Generation Fuel

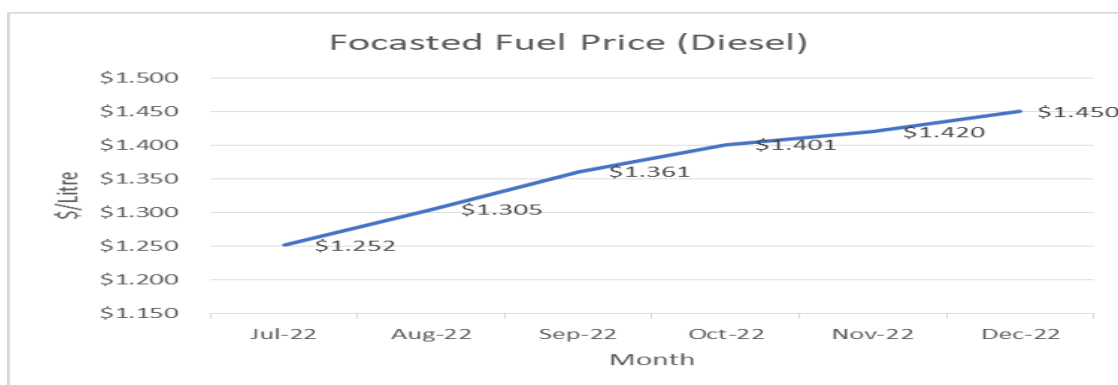
The recent trend in wholesale price of diesel for power generation continues to impact NUC cash flow especially with vivid increase of prices in Q3 and Q4 of 2022. These prices over the last 6 months' period has increased by 54.4% and expected to further increase over the next 3 to 4 months.

This increase will have direct impact on NUC fuel budget of \$38,000 per every 100,000 litres transfer, around \$329,948.56 per month depending on increase in demand and efficiency gains. This upsurge has affected this financial year by \$1,979,691.33 against budget in the current financial period. A total of 5,275,140 litres equivalent to \$8,309,859.33 of diesel fuel was received for the 6 months' period of which 4,812,346 litres was utilised for power generation purposes.

Oil price remain constant for the 6 months period at \$4.51 per litre for Delo Gold 15W40 utilised for high speed engine and \$5.37 per litre for Mobil Gard 412 utilised for medium speed engines. The 6 months period saw NUC received a total of 32,720 litres of engine oil, of which 24,684 was used for diesel generators.

The 2 graph below shows actual fuel price/litre NUC paid for against its forecast for the period.





The following table below provides NUC Power Operations Key Performance measures for the period July to December 2022.

Key Performance Indicators	July	August	September	October	November	December
Generation Capacity						
Total Installed Capacity (MW)	20.2	20.2	20.2	20.2	20.2	20.2
High Speed Installed Capacity (MW)	7.0	7.0	7.0	7.0	7.0	7.0
Medium Speed Installed Capacity (MW)	13.2	13.2	13.2	13.2	13.2	13.2
Total Available Diesel Capacity (MW)	15.75	15.75	15.75	15.75	15.75	15.75
High Speed continuous rated (MW)	4.3	4.3	4.3	4.3	4.0	4.0
Medium Speed continuous rated (MW)	7.9	7.9	7.9	7.9	7.9	7.9
Renewable Energy Capacity						
Total Solar PV installed (MW)	2.94	2.98	3.02	3.07	3.09	3.09
Total Roof-Top Solar (MW)	1.04	1.08	1.12	1.17	1.19	1.19
Total Ground mounted (MW)	1.9	1.9	1.9	1.9	1.9	1.9
Generator Performance						
Generator Availability (%)	84	86	89	86	84	93
Generator Maintenance Compliance (%)	91	92	93	92	91	94
Specific Fuel Consumption (kWh/L)	4.02	4.07	4.05	4.03	3.89	4.02
Specific Lube oil Consumption (kWh/L)	875	976	1004	1041	712	1053
Power Station Auxiliary (kw/h) Consumption	53.420	53.576	53.463	54.358	53.535	54.353
Fuel Reports						
Lube oil Usage (Litres)	3432	3952	4068	4456	2603	6174
Diesel Fuel (Litres)	983,201	746,799	998,995	805,045	852,100	889,000
Diesel Price per month (\$)	1.465	1.465	1.465	1.701	1.711	1.711
Cost of Diesel Fuel per month (\$)	1,439,451.49	1,087,813.47	1,462,574.64	1,345,648.07	1,453,072.68	1,521,297.69
Reliability of Supply						
SAIDI (Planned)	3.10	3.80	3.18	8.58	2.90	5.40
SAIDI (Unplanned)	74	31	39	49	62	86
SAIFI (Planned)	0.89	0.99	0.40	0.46	0.12	0.30
SAIFI (Unplanned)	2.08	0.89	2.78	0.60	0.20	2.30
SAIDI (Total Customer Minutes)	77.10	34.80	42.18	57.58	62.9	91.4
SAIFI (Total Customer Outages)	2.97	1.88	3.18	1.06	0.32	2.60
Energy Losses %	11	12	12	9	18	12

The system average interruptions duration index (SAIDI) and the system average interruptions frequency indicator (SAIFI) varied over the period.

The increase in SAIFI was due to unplanned interruptions caused by faults on the Ring Main East underground cable failure, Ring Main South and Ring Main North overcurrent faults caused by pole top burnt cross arms and insulation failure.

Energy sales in kWh is outlined in the following table.

		2022					
Energy Sales		July	August	September	October	November	December
	Days	31	31	30	31	30	31
Domestic prepaid lifeline @\$0.22/kwh	kWh	593,986	596,092	614,672	611,546	594,465	553,039
Domestic prepaid regular @\$0.47/kwh	kWh	935,627	954,168	942,644	1,003,949	856,512	820,831
Total Domestic Prepaid	kWh	1,529,613	1,550,260	1,557,316	1,615,495	1,450,977	1,373,870
Domestic - Postpaid @\$0.48/kwh	kWh	106,190	122,996	106,323	113,245	103,694	161,759
Commercial - Prepaid	kWh	270,390	269,724	380,728	277,130	264,729	325,936
Commercial - Postpaid	kWh	342,817	379,401	351,584	372,416	365,233	422,294
Government - Prepaid	kWh	46,783	85,743	42,900	48,057	59,972	-
Government - Postpaid	kWh	318,081	370,938	580,379	453,085	475,283	759,665
Industrial- Prepaid	kWh	20,200	27,215	14,100	20,200	20,786	20,857
Industrial- Postpaid	kWh	101,409	142,066	193,378	138,093	110,787	83,032
Total Domestic	kWh	1,635,803	1,673,256	1,663,639	1,728,740	1,554,671	1,535,629
Total Commercial	kWh	613,207	649,125	732,312	649,546	629,962	748,230
Total Government	kWh	364,864	456,681	623,279	501,142	535,255	759,665
Total Industrial	kWh	121,609	169,281	207,478	158,293	131,573	103,889
Total Energy Sales kWh		2,735,483	2,948,343	3,226,708	3,037,721	2,851,461	3,147,413
Budget kWh							
Non-Revenue Energy							
NUC Offices	kWh	11,232	11,493	10,028	10,819	8,337	8,742
Board + NUC Minister	kWh	1,800	1,800	1,800	1,800	1,800	1,800
Staff Top Up Benefits	kWh	35,004	35,004	35,913	36,823	36,823	36,283
NUC Houses	kWh	3,723	3,723	4,255	4,255	4,255	4,255
Street Lights/ Public Lighting	kWh	24,540	24,540	24,540	24,540	24,540	24,540
Total Non-Revenue Energy Usage	kWh	76,299	76,560	76,536	78,237	75,755	75,620

The average monthly energy distributed to customers was 2,991,188 kWh for the period to December 2022 and decrease of 13% compared to the same period last financial year. Energy demand for the 6-month varied by 2.5% with the total energy consumption for the period of 17,947,129 kWh.

Overall demand for electricity remained relatively steady over the 6-month period. Non-revenue electricity totalled 459,007 kWh accounting for less than 2% of total energy sales generated in the 6-month period.

This included free issue electricity top-up, supply to NUC premises and sites including un-metered public lighting around the island. This excludes technical and non-technical losses such as network losses, electricity theft and meter bypass.

Renewable Energy Generation

The uptake of roof top solar PV installation continues to grow over the period with residential grid connect solar rooftop installation generating and exporting more electricity to the network

The increase in number of households installing rooftop solar PV system is projected to grow for the remaining period.

The total half yearly result for the renewable energy generation from 1 July 2022 to December 2022 is set out below.

Renewable Energy Data 1 July 2022 – 31 December 2022							Total Half Yearly Result
Description	July	August	Sept	October	November	December	
KWH Generated by Grid Connect Customers	103,447	146,270	151,771	160,178	138,455	156,770	856,891
KWH Generated by Ground Mounted Solar	240,168	254,813	279,281	278,174	244,685	232,894	1,530,014
KWH Generated by Non-Grid Customers	13,377	15,796	23,859	21,872	19,212	8,920	103,036
Total Solar Generation in KWH	356,992	416,879	454,911	460,224	402,352	398,584	2,489,942
Total KWH Exported to the Grid	227,054	299,032	289,717	238,018	277,353	261,883	1,593,057

Grid connect customers produced a total of 856,891kWh, while non grid customers generated a total of 103,036 kWh for the same period.

The three ground mounted sites produced a total of 1,530,014 kWh for the period.

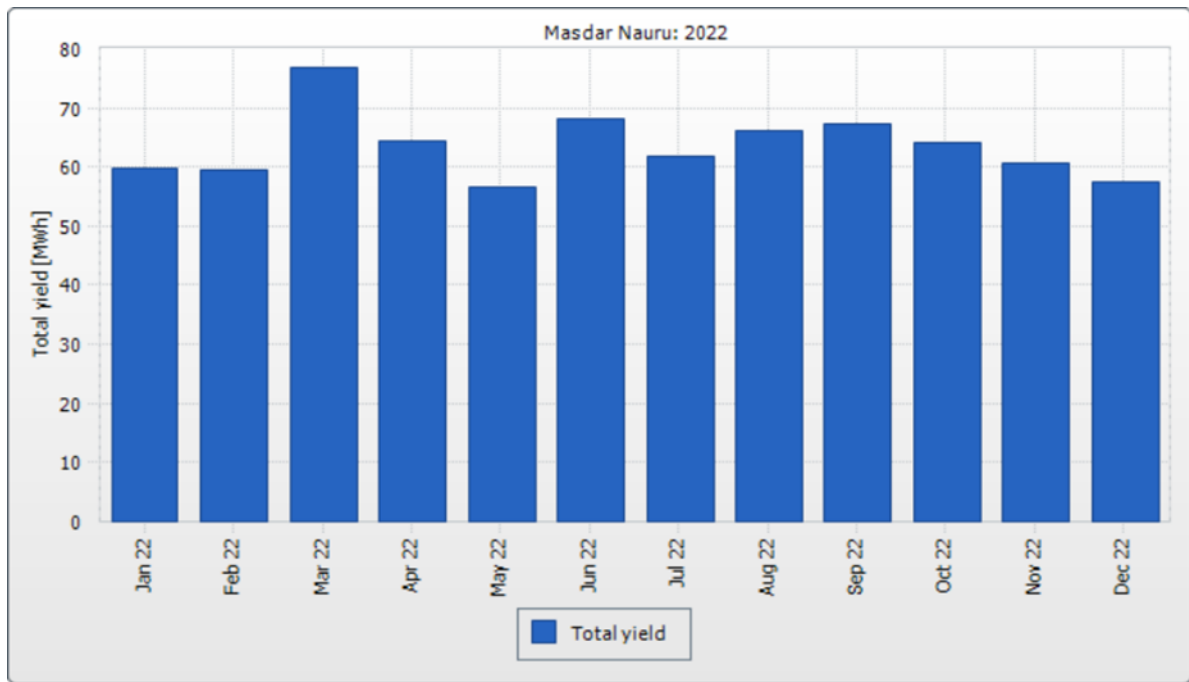
The total solar generation for the period is 2,489,942kWh while 1,593,057kWh was exported to the Grid or 64% export to the grid.

The percentage of total energy generated from Solar and Percentage of total diesel offset for the period is set out below.

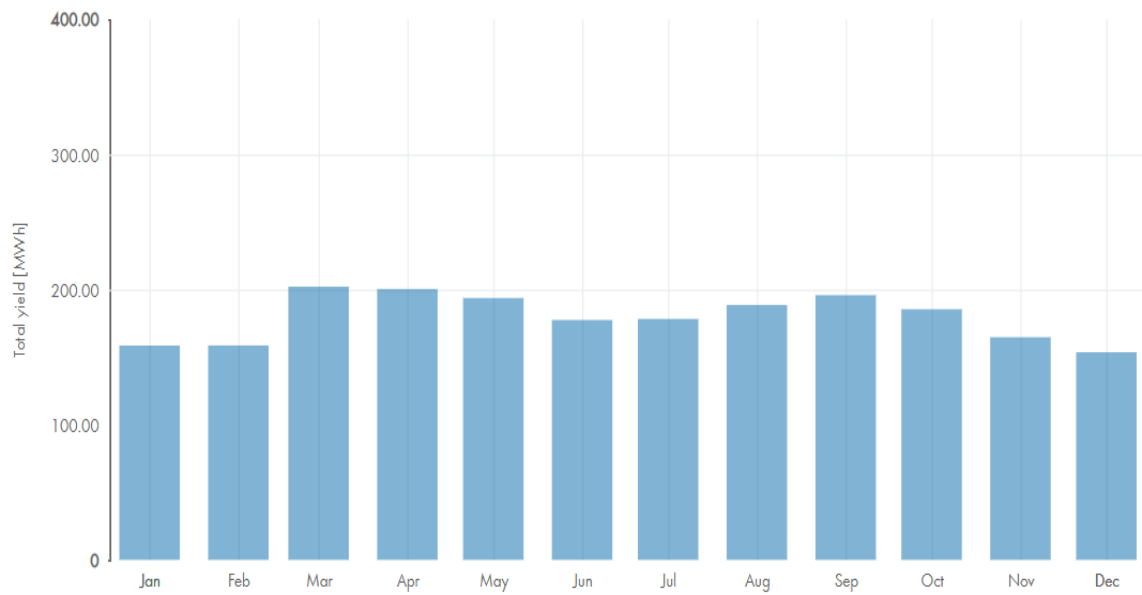
	July-22	Aug 22	Sept 22	Oct 22	Nov 22	Dec 22	Average for the period
%Solar penetration (Percentage of total energy generated)	11.5%	14%	16%	16.2%	15.2%	10.7%	13.9%
% Diesel offset. (Percentage of total diesel fuel used in the period)	11.7%	17.1%	16.7%	26.4%	25.84%	18.32%	19.34%

Note: Specific fuel consumption for December is 3.87 kWh/litres

NUC Ground Mounted Solar Site Performance:



UAE Solar Site Monthly Performance – 2022:



New Grid Connect Customers:

We continue to receive and process Grid Connect Customer applications.

The table below depicts the total Roof Top Grid Connect and RT Customer Connected and the GM installations we have on island to date:

Count of Conn Type	Column Labels				
Row Labels	Completed	For invoicing	Pending	Paid, incomplete wiring	Grand Total
Ground Mounted	3				3
RT Customer Connect	5				5
RT Grid Connect	91	20	1	1	113
Grand Total	99	20	1	1	121

New 6 MW Solar Development Project

Background

1 July to 31 December 2022 Progress Update

The Republic of Nauru, referred to as “Nauru”, is a Pacific Island country, has approximately 13,000 residents. It predominantly sources its energy through diesel power generators. About 16% of its current energy demand is sourced from renewable energy - solar Photovoltaic (PV) installations. The Government of Nauru has a target to increase the annual energy renewable penetration within Nauru to 50%. Based on the Nauru Solar Power Expansion Plan, the construction of 6 MW solar farm coupled with 2.5MWh/5MWh of battery storage is designed at the “Construct” site. The demanded facilities include: A 6 MW (nominal installed AC capacity) Solar Farm. A Battery Energy Storage System (BESS) with a capacity of 2.5 MWh / 5 MWh and an 11 kV Substation, including all switchgear, power transformers and connection to the existing NUC 11 kV distribution system.

General Description:

Project Name: Nauru Solar Power Development Project

Employer: Nauru Utilities Corporation (NUC)

Contractor: CHEC-HNAC-RISEN JV

Engineer: GHD Limited.

Contract No.: NUC/NSPDP/01

Contract Price: USD\$ 14,311,732.68

Date of Commencement: 14th January 2021

Date of Completion: 13th January 2023. (New proposed date – 31 July 2023)

Completion Time: 28 weeks

A baseline program was submitted at the engagement of the contractor. This has been updated a number of times based on works progress. Key milestones dates identified in the baseline program and most recent program are shown in the table below.

Milestone	Baseline Program	Current Program
Project commencement	August 3, 2020	January 13,2021
Completion of detailed designs	October 7, 2020	January 30,2023
Procurement commences	August 10,2020	Jan 19 - 2023
Equipment arrival in Nauru	December 20, 2020	April 4,2023
Works commence at site	December 10, 2020	March 12, 2022
Commissioning commences	April 13, 2021	July 24, 2023
Practical completions	August 3, 2021	July 31, 2023

A revised program was submitted on 24 December 2022. This program reflects the current status of design and mobilization of personnel and materials. Most of those dates have slipped further. Design is linked to procurement and then to installation. Delays in the electrical equipment designs have resulted in overall program delays.

As such, the commissioning date has pushed out to early June resulting in a practical completion now scheduled beyond the contractual completion date, with delay of 28 weeks predicted.

A recent update from the contractor regarding shipment is that some electrical equipment will not be received until mid-April 23. This puts in doubt the commissioning works in early Feb 23 and therefore it is unlikely that the practical completion date currently advised of 31 July 23 is likely.

Nauru is still in level 3 restrictions due to COVID 19 and community transmission. However, work continued on the site during the 1st half of this financial year, with the local workers also assisting in certain areas at the site.

Utilization of Project Funds

At the end of December 2022 the utilization of funds is defined in the table below

	Current Allocated Funds	Approved Variations	Current allocated funds	Cumulative disbursements	Estimate cost to complete
CHEC	\$US14,311,731.68	\$US555,614.33	\$US14,867,347.01	\$US8,557,910.69	\$US6,309,436.32
GHD	\$NZD2,049,437.00	Nil	\$NZD2,049,437..00	\$NZD1,319,571.73	\$NZD729,865.27

Interim payments # 1 - 10 to CHEC have been processed and paid out by ADB while Payment # 1 - 23 to GHD have been processed and paid out by ADB.

Environment & Social Safeguards & Training

NUC together with GHD continue to work toward achieving all contractual covenants in this area. GHD through its environmental specialist is working around the clock checking all environment breaches and advising contactors of mitigations for each breach.

Every training has been conducted with the remaining where 2 trainings to be conducted. Gender equality training for the community will be conducted by WASDA on the 24th of February while the ADB procurement Policy training will be held on the 16th of March 2023 at USP

Quality Control and Compliance Assurance

Continuous control and quality assurance work is carried out by the team which includes CHEC-GHD and NUC on all materials and equipment's that is to be used temporarily or permanently at the solar site.

GHD continues to do compliance checks, assurance and verification work on the 2nd 50% of the electrical design. This is expected to escalate the procurement and delivery process of materials and equipment's.

Project Personnel

As of December 2022, the following personnel were still engaged at the project.

No	Positions	Amount	Remarks
1	Management	8	1 has left for China on 20 th Nov
2	Installation of solar panels and electricity work team	6	
3	Piling work team	0	All piling team workers have left for China
4	Building structure construction work team	8	
5	CLO	0	Local female, had resigned. CHEC still looking for a replacement
6	Security	4	Security is now provided by NUC 24/7. NUC invoices CHEC every fortnight for the cost.
7	Cleaner	2	2 Cleaners working now (ladies)
8	Local labors	7	Local labors engaged to carry out fencing works
	Total	35	(13 Local employees, 4 females)

Construction

By December 2022, the following was the status of construction works being carried out at the site.

- 11KV Switch Room Substation – All constructions work has completed. Only internal/external fit out is pending together with electrical switchgears and control wiring.
- Pile foundation installation is 100% complete
- Fence foundation construction and mess wire installation is 100% complete
- 11KV Substation foundation for 5 only HV transformer is 100% complete
- Battery Energy Storage System foundation is 100% complete
- Water storage tank foundation and tank installation is 95% complete
- Guard house construction is 95% complete
- PV Panel installation is at 31% complete.

Major Items of Work

Item		Total	29/11/2022		01/01/2023	
			Complete	Percent Complete	Complete	Percent Complete
Mobilisation	Item	1	1	100%	1	100%
Fence post Installation	No.	1438	1284	89%	1357	100%
Fence - mesh wire installations	No.	1438	1014	71%	1357	100%
Piling	No.	4560	3984	87%	4560	100%
Total Solar Panels onsite	No.	15200	14880	98%	15200	100%
Total Panel Groups Installed	No.	760	182	24%	233	31%
Total Pile Groups Installed	No.	760	664	87%	760	100%
Combiner Box Installation	No.	27	0	0%	0	0%
Inverter Installation	No.	108	0	0%	0	0%
Substation Building foundations	Item	5	5	100%	5	100%
Substation Wall Installation	Item	5	2	40%	5	100%
Substation Equipment	Item	1	0	0%	0	0%
Guardhouse Building foundation	Item	1	1	100%	1	100%
Guardhouse Building	Item	1	1	90%	1	95%
AC Cable Installation	Item	4250	0	0%	0	0%
DC Cable Installation	Item	58000	0	0%	0	0%
Cable Conduits	Item	1	0	0%	0	0%
Comms Cable Installation	Item	6000	0	0%	0	0%
HV/LV Cable Installation	Item	3070	0	0%	0	0%
BESS Foundation	Item	4	4	100%	4	100%
11KV Switch room	Item	1	1	90%	1	95%
BESS Installation	No.	4	0	0%	0	0%
Water Tank Foundation Installation	No.	2	0	0%	1	100%
Water tank Installation	No.	2	0	0%	0	50%
SCADA Installation	Item	1	0	0%	0	0%
Road Engineering (Subgrade)	Item	410	0	0%	0	50%
Road Engineering (Mud fill Pavement)	Item	410	0	0%	0	0%
Protection	Item	1	0	0%	0	0%
Rainwater system	Item	1	0	0%	0	0%
Commissioning	Item	1	0	0%	0	0%
Demobilisation	Item	1	0	0%	0	0%
Total Percentage Complete		58%		58%		58%

Note that Total percentage complete is based on payment claims as each item has a different weighting for overall construction.

Major Project Risk and Problems

Ref	RISK TYPE	DESCRIPTION	LIKELIHOOD	CONSEQUENCES	RATING	OWNER	MITIGATION
1	Programs	The contractor's electrical design is now substantially delayed from the original program date. While there was initially float built into the program, this float is now exhausted and is now causing delays to procurement and construction activities.	Likely	Major	High	Contractor	GHD is offering support to the contractor to develop the design and have spoken with the senior management of the contractor
2		Based on the program, the contractor has flagged an overrun of 28 weeks. Liquidated damages equivalent to 0.5% of the contract sum per week, 28 weeks	Possible	Moderate	Medium	Contractor	Contractor to develop mitigation strategies to improve program.

Energy Efficiency and Demand Side Management Strategy

Energy Efficiency – LCF Rebate initiative

NUC administers an energy efficiency rebate scheme funded by the IUCN which supports customer who wish to purchase energy efficiency washing machines and refrigerators and freezers by providing 30% rebate on the purchase price of the item

For the period from July 2022 to December 2022 a total of 50 applications for the rebate initiative were received.

A total of 32 applications was approved and paid the 30% rebate, 18 was declined for non-compliance.

A total of \$11,022.00 was disbursed for the period.

The initial LCF grant was \$176,035.52 of which \$82,465.00 has been paid out to date leaving a balance of \$93,570.52

Electricity Customer Connection Data

Customer Connections & Metering

A total of 245 new customer connection applications were received during the period from 1 July 2022 to 31 December 2022.

A total of 152 connections were completed in the period and all 152 were domestic with nil commercial customer connection for the period

The customer connection team attended to other works as detailed in the table below:

Type of work	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	YTD
Alteration works	5	22	26	28	13	31	125
Customer faults	50	62	91	123	88	81	495
Damaged meter	0	0	0	1	1	1	3
Faulty CIU	1	1	4	2	2	0	10
Change of metering mode	3	0	1	0	0	0	4
Faulty meter	4	0	5	2	6	3	20
By-pass cases	0	0	1	0	0	0	1
Blank meter	26	13	12	25	34	28	138
Unmetered installation	0	0	0	0	0	0	0
By-pass reconnected	0	0	2	0	0	0	2
Disconnection	1	0	0	0	0	0	1
Re-inspections	0	0	0	7	7	7	21
Meter Testing	3	2	2	2	0	0	9
Streetlight repairs/Installation	6	2	0	5	2	0	15
Meter Change	0	1	1	1	4	3	10
Meter Inspections	0	0	0	0	0	0	0
Meter reading	3	5	5	2	3	1	19
Initial Inspections	45	61	58	25	21	21	231
Meter Connection	22	39	26	24	20	21	152
KRN Updates	26	2	8	5	11	1	53
General duties	2	17	22	29	36	16	122
Scratch card call out	0	0	0	0	0	0	0

The total number electricity customer as at 31 December 2022

CUMULATIVE (TOTAL) NUMBER OF CUSTOMERS					
	Dom	Comm	Ind	Gon	Total
Post-paid	82	74	7	46	209
Prepaid	3673	365	20	9	4067
Fixed rate	0	0	4	0	4
Removals	0	0	0	0	0
Total	3755	439	31	55	4280

Metering

The TID rollover is currently at 67% and is on target to complete before due date of 24th Nov 2024. This is the upgrading of the meter base dates from 1993 to 2014 and from KRN1 to KRN 2.

DISTRICT	NO OF METERS	NO'S COMPLETED	PENDING	COMPLETE
Aiwo	566	520	46	92%
Denig	762	709	53	93%
Anabar	178	160	18	90%
Buada	362	9	353	2%
Anibare	111	106	5	95%
Meneng	591	21	570	4%
Anetan	206	164	42	80%
Ewa	177	174	3	98%
Yaren	299	16	283	5%
Baitsi	207	200	7	97%
Boe	344	336	8	98%
Ijuw	71	71	0	100%
Nibok	214	197	17	92%
Uaboe	132	128	4	97%
Total	4220	2811	1409	67%

The Meter Test Bench continues to test energy meters before they are installed at customer's installations. For the half year period, a total of 224 meters were tested.

There were no meters tested in the test room in November and December 22 due to malfunction of the existing laptop. The replacement laptop has been purchased and is currently in use.

Distribution Network

The national grid network transmission and distribution system consist of TRX upstream to (HV) 3.3kv/11kv and downstream to (LV) 415v/240V supplies the vast majority of household customers throughout Nauru each with their own distinct level of consumption, and with most low voltage cables and conductors at least 40 years old.

As residential demand for electricity increases over time, the low voltage electrical network will be put under considerable strain. Without considerable investment in the existing networks – or application of smart network management – outages are likely to become more common.

Improving the capacity of the local electricity network, its ability to cope with load issues and being able to quickly identify and reduce outages will be crucial to the success of our electrical future. With the predicted uptake of additional solar installations or potentially the use of electric vehicles, a key challenge will be creating a robust network with distributed grid connected solar to generate the right amount of power to maintain reliable supply to our customers.

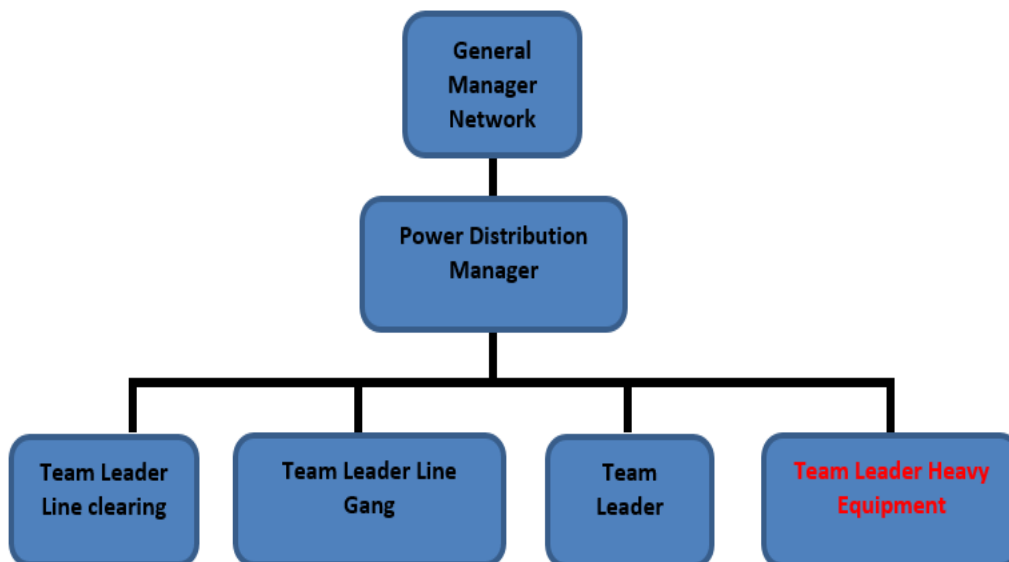
The refurbishment and augmentation of the low voltage network has progressed as funding has been made available. However, rusted steel pole structures still remain and poor design of underground installations and overhead network require further attention.

The current condition of the low voltage conductors, many with broken strands, incorrectly sized conductors and high resistant joints and connections reduce the capacity of the lines and increase technical losses on the network. It is estimated that 22% of energy generated does not earn revenue for NUC due to high losses on the network.

The refurbishment of the LV network would reduce such losses caused by these technical losses i.e., old conductors, poor connections and joints and inferior public lighting system.

Non-technical losses on the low voltage network also contribute to lost revenue for NUC, which include, electricity theft and meter by-pass, billing and accounting errors, or under-estimation of electricity bills.

One separate note, there is a need for heavy duty equipment operator. This specialise role is crucial to minimise unauthorised usage which tantamount to unwarranted repairs. Proposal has been submitted for this position. The revised organisation hierarchy for Power Distribution will be as below once this position is filled.



Water Production and Storage

Reverse Osmosis (RO) Sea Water Piping and Pump Capacities

NUC's Water Production and Storage Network includes

- Water treatment plants associated with sea intake systems at Meneng and Aiwo Power Station sites;
- Four RO plants fed via sea water intake pumps. The current configuration comprises two by 200 kL per hour pumps with total intake demand for the RO's at 212kL per hour.
- Six storage tanks with capacities of 275 kL, one steel storage tank (B13) with 4000 kL capacity and an additional (B10) tank installation of 3000 kL and two by 300 kL capacity being progressed.
- Additional five storage tanks (C7 – C12) with capacities of 275 kL. Tanks C7 to C12 are concrete tanks which require condition assessment to determine viable options for reuse. (Note: there is additional storage capacity for the Refugee Processing Centres spread over numerous tanks which total approximately 2.5 megalitres.); and
- Trucking capacity of 1 x 4,000, 1 x 5,000, 2 x 8,000 and 2 x 10,000 tankers owned and operated by NUC; and 6 Hire Tankers of various sizes to support peak demand periods.

NUC's current maximum desalination treatment capacity is approximately 2300 kl/day or 2.3 mega litres per day. The current capacities of operational RO's are illustrated in the following table.

Plant No.	Plant Manufacturer	Capacity (kL/day)	Status
1	Osmoflo 900	900	Operational
2	Avenale 800	800	Operational
3	Avenale 480	480	Operational
4	Hitachi	110	Operational
5	Veolia Meneng	45	Decommissioned
6	Meneng Avenale 480	480	Installation in progress

The Meneng Avenale 480 plant, is being progressed, however is subject to a number of constraints which currently delay the completion of the project in 2021-22. NUC is working through the issues to finalise the project.

The Meneng (Old) 45 kl/day plant is decommissioned in September of 2022.

The relocation of the Hitachi 110kL RO from Aiwo to Meneng site has completed in July of 2022 and since then, the plant is operating steady at a production rate of 96 kL/day accommodating well on top of the Meneng Hotel demand which is around 40 to 50 kL/day.

AusAID funded 2 x 900kL/day reverse osmosis units and a 1.5ML/day remineralisation plant expected to be completed by the end of the 2021-22 financial year and delayed with the revised proposed commissioning of the new plant by the end of 2022-23 financial year. However, the installation of the shed facility to house the new RO plant has been completed in September 2022.

The two new RO's to be installed at the Aiwo Power Station site will increase water production installed capacity to 5.70 ML/day and achieve N-2 security of supply for water. The existing RO plant continues to meet the demand for water, where demand during the 6-month period remained steady at around 1.1 to 1.2 ML per day. This was mainly due to the prolonged drought which was forecasted to last well into the second half of the year 2023.

The relocation of the sea intake from Bore 1 situated within the Ports project development site is almost completed with only left with the covering of the main sea intake at the sea drop off located at the south end of the Ports development.



The following table sets out NUC water production and delivery key performance results for the period 1 July to 31 December 2022.

Key Performance Indicator	July	August	September	October	November	December
Water Production Unit						
Osmoflow 900 production (Litres)	503,000	1,947,000	1,579,000	5,227,000	6,289,000	5,688,000
Avanale 800 production (Litres)	12,013,000	14,389,000	13,788,000	12,752,000	14,642,000	14,944,000
Avanale 480 production (Litres)	8,354,000	5,413,000	6,775,000	7,708,000	4,396,000	4,375,000
Hitachi 110 production (Litres)	303,000	2,742,000	2,871,000	3,138,000	2,947,000	3,054,000
Veolia 45 production (Meneng) (Litres)	Decommissioned (<i>Note: this KPI will be removed in the next report</i>)					
Total Water Production (Litres)	21,173,000	24,491,000	25,013,000	28,825,000	28,174,000	28,061,000
Electricity Usage for Water Production (kWh)	124,565	134,140	130,427	145,564	137,299	135,962
Reverse Osmosis Units	78	100	100	100	100	97

Availability (%)						
Water Delivery Unit						
Water Delivery Ratio (%)	69	67	68	68	75	66
Water Tank Availability (%)	83	83	77	83	75	67
Hired Tanker delivery Ratio (%)	26	28	33	28	33	29
Total Water Deliveries (Litres)	18,285,000	22,571,000	21,859,000	24,518,000	23,588,000	23,526,000
MTC Demand (Litres) (% of total delivered)	20	16	19	18	27	19
NUC Demand (Litres) (% of total delivered)	80	84	81	82	73	81
Total Water Sales (\$)	222,974	267,324	301,373	302,493	275,646	317,245
Daily Consumption (per Capita) (Litres)	54	67	65	73	70	70
Water Losses (% of production)	1	10	7	20	9	19

Water production over the period gradually increased from 21 ML and steadied at 28 ML that reflects the water demand as a result of the continuous drought in the period. Total water production for the period reached 155,737,000 litres with an average month production rate of 25,956,169 litres produced over the 6 months.

Total water delivered for the period was 134,347,000 litres, with an average of 22.4 ML/month.

The continual consistency in water demand in the period was due to the extended drought period as a result of rainfall varies in the minimal range between 20mm in July and 10mm in December.

Water Tanks Storage Capacity

The current tank capacities available to NUC are set out below:

Tank (ID)	Capacity (kL)	Operational Status
C1	275	Operational
C2	275	Operational
C3	275	Operational
C4	275	Operational
C5	275	Operational
C6	275	Operational
B13	4,000	Operational
B10	3,000	Installation to be progressed
C7	275	Need to assess condition and viable options for refurbishment
C8	275	Need to assess condition and viable options for refurbishment
C9	275	Need to assess condition and viable options for refurbishment

C10	275	Need to assess condition and viable options for refurbishment
C11	275	Need to assess condition and viable options for refurbishment
C12	275	Need to assess condition and viable options for refurbishment

Tank B13 is constructed of steel and requires regular maintenance and condition monitoring. B10 has been removed and replacement is currently planned with a 3,000kL capacity tank. Initially, the project has been delayed due to COVID-19 travel restrictions as the contractor is based in Western Australia. The contractor looked into the option of subcontracting specific task where at least progress is achieved. The completion date of this project is still in discussion.

Tanks C7 to C12 are concrete tanks which require condition assessment to determine viable options for reuse. Increased storage availability provides higher levels of water security as it provides a buffer should a catastrophic failure occur with the RO plants or prolonged power outages.

Donor funding is required to refurbish tanks C7 to C12 to improve security of supply.

There is additional storage capacity for the Refugee Processing Centres spread over numerous tanks which total approximately 2.5 mega litres.

Water storage capacity was maintained at approximately 4.6 million litres for security of supply over each month of the reporting period. This equates to 9 days' secure supply of water based on rationing and restrictions of use.

However, captured water losses vary between 1 to 20 % due to non-revenue water in the period.

Water storage tank relining and maintenance work were completed within the period for all C1 to C6 tanks. The leakage has significantly improved to an acceptable level.

Water Distribution and Delivery

NUC's fleet of water tankers comprises 12 trucks of which 6 are hire vehicles with a total fleet capacity of 80 kilolitres.

NUC's current trucking capacity is detailed in the following table.

Vehicle	Capacity (Litres)	Status
Truck 1	4,000	Operating
Truck 2	5,000	Operating
Truck 3	8,000	Operating
Truck 4	8,000	Operating
Truck 5	10,000	Operating
Truck 6	10,000	Under Maintenance in September 2022
Hire Vehicles		
Truck 1	7,500	Operating
Truck 2	7,500	Operating
Truck 3	7,500	Operating
Truck 4	4,000	Operating
Truck 5	4,000	Operating
Truck 6	4,000	Operating

During the 6-month period NUC water tankers including the use of hire trucks, delivered upwards of 1.5 million litres of water per day to customers. This equates to approximately 20 deliveries per tanker per day, or around 110 deliveries per day overall.

NUC's water delivery ratio was in an average of 69%. The delivery ratio measures how effectively NUC has been able to achieve its delivery target of customer water delivered within 2 days, that is NUC has been able to achieve 69% of deliveries to customers within 2 days from the date of order.

Several factors have impacted on NUC's delivery ratio during the period. These included:

- Reprioritized customer deliveries impacting on delivery schedule. NUC receives approximately 21% of customer's unscheduled orders which are managed daily to ensure delivery to all customers within the 2 days of order;
- late notification of water orders by customers who run out of water;
- non availability of hire vehicles due to hire tanker breakdowns; and
- Rescheduling of deliveries to customers at the customer's request.

Overall, water deliveries have upheld its course in delivering approximately an average of 3,025 deliveries each month. Although, the water sales are proportionate, the operational cost is exponential due to the actual cost of delivery not able to be fully recovered through the tariffs.

Achievements against Key Program of Work

Power Generation

Power generation work that was completed this period included:

- The commissioning of G4 Ruston diesel generator in late November with an installed capacity of 2.6MW providing a continuous available capacity at 2.2MW.
- The commissioning of G8 Cummins diesel generator in early September with an installed capacity of 1MW providing continuous available capacity at 700-800KW depending on demand and efficiency gains.
- G3 M.A.N completed pedestal bearing rectification works in early December after a delay in fabrication of main pedestal bearing from manufacturer and the deputation of TDPS alternator service engineer.

Ongoing maintenance to all high-speed generators and the medium speed MAN engines was also carried out during this period with an average maintenance compliance rate at 92.2% for the first 6 months July to December 2022.

The recent commissioning of G4 Ruston diesel generator and G8 Cummins diesel generator combined with the complete rectification works on G3 M.A.N Non-Drive End pedestal bearing has enabled NUC to achieve sufficient generation capacity to meet maximum demand with N-2 security. This saw NUC achieve one of its business strategies of providing sufficient generation capacity to supply the maximum demand of the system with loss to any of the two largest M.A.N diesel generators.

The major overhaul works on G6 Ruston diesel generator continue to progress slowly as anticipated with 80% mechanical works has been achieved this period while the remaining 20% which incorporates complete installation of diode plate and PLC on engine GCP remains. Upgrade works on G1 Ruston diesel generator is also progressing slowly with pipe works for engine cooling system from engine to radiator and vice versa is continuing gradually in this period while the next 6 months would see G1 commence works on the exhaust system.

The Ports 11kV supply for this period proceeded with the completion of the Ports feeder termination at the Aiwo power station which encompassed the installation of Ports Feeder RMU in the 11kV room. Completion of the connection at the New Ports is dependent on the progress of the road upgrade at NUC and Ronphos area and including the Ports development.

Works at the 6 MW solar development project continue to advance sluggishly with an abundance of work scopes remains unaccomplished during this period with statement now circulating that the project might not be in full operation by early 2023. This delay would have significant impact on NUC fuel budget as it was forecasted that the commissioning of the 6MW solar farm would decrease operation of diesel generator during the day consequently reducing Power Station diesel consumption.

Several major projects in power generation is scheduled to begin Q2 of 2023 this includes the major overhaul to G2 M.A.N diesel generator at 32,000hrs with running hours recorded at 30,400hrs ending December 2022.

Power Distribution

The implementation of certain projects funded by NUC remains dependent upon available revenue, cashflow and availability of resources. Below is the progress report from Power Distribution perspective.

#	Item	Department	Budget	Achievement
5	Cherry Picker Truck-12.5m Boom	Power Distribution/Metering	250,000.00	Pending funding availability
6	3 ton Twin-cab, canopy & Toolbox x2	Power Distribution	200,000.00	In process - Tender
7	11kv Switchgear - Domestic Feeder	Power Distribution	150,000.00	Pending funding availability
8	Upgrade of network HV Switches to enable remote operations (5 locations)	Power Distribution	116,000.00	TBC
17	Smart village	Power Distribution	500,000.00	In consultation stage with government
20	Power Distribution Workshop	Power Distribution	40,000.00	roll over to next budget

The geographic location of the distribution network is near the coastal line areas and is prone to westerly winds. Overtime, see breeze deposits accumulate on the cross arm. This gradually reacts and catch fire burning the cross arm.

Weekly Planned outages for cross-arms replacement and mitigation program are in place. Power distribution team urgently replaced the hardwood cross-arms structure to fully insulated light weight fibre glass cross-arms. Till to date fibre glass hardware have not failed. Total of 40 fibre glass the team manage to install so far.

Below is a table that shows the spread of the cross-arm replacement including the District the program was carried out in.

11KV FIBRE GLASS REPLACEMENT PROJECT

FIBREGLASS HV CROSSARMS									
Anetan		Anabar		Ijuw		Anibare		Meneng	
Double	Single	Double	Single	Double	Single	Double	Single	Double	Single
1	2	1	6	2	14	NIL	12	1	1

Below are some pictures of replacement of wooden cross arm to fibre glass cross arm and the various methods used to mitigate the sea breeze corrosion



Public light installation and service & maintenance program

STREET LIGHT INSTALLMENT			
DISRTICT	DATE	POLE NUMBER/ LOCATION	REPAIR/ NEW
Nibok	16/11/22	35	New
Uaboe	20/12/22	Near Angela Station	New
Anetan	12/01/2022	117	New
Anabar	21/12/22	127	Repair
Ijuw	21/12/22	166	New
Ijuw	21/11/22	168	Repair
Anibare	24/11/22	198	New
Menen	22/11/22	233	New
	22/11/22	ICT pole (opposite 234)	
	23/11/22	243	
	24/11/22	246	
		247	
	12/01/2022	257	Repair
	27/1/23	264	
	13/12/22	277	
		278	
	1/06/2023	Teacher's Gully	New
12/05/2022	Menen Terrace Substation		
Anibare	25/1/23	ABS:187	Repair
Boe	29/1/23	Behind Ruswells place	New
Menen	2/06/2023	266	Repair
		267	

Water Operations

The construction of new Water Office is nearing completion and was scheduled to be completed in the second half of 2021-22, however, with specific setbacks around the project progression that includes internal design changes and material availability constrains, the project completion is re-scheduled to be achieved within the first half of year 2023.

Two key projects continue to be delayed due to COVID-19 travel restrictions. These include:

- 3ML and 300 kL Water Storage and Treatment Tank to be installed at the B13 site
- 300kL treatment tank – Meneng Water Production Site. However, the Meneng Water Production Site will be progressed in the second half of the financial year, with the installation of an alternative 480kL reverse osmosis unit to improve water security for Nauru.

The new sea intake system coupled with the Ports Development Project is completed. Two by 200m³/d in a Duty-Standby configuration were installed for the supply of sea water to the RO plants until the new sea intake system is commissioned and put into operation which is expected to take place within the first half of 2023.

The AusAID funded 2 x 900kL/day RO plant and 1.5ML/day remineralisation plant that was expected to be commission by end of October 2022 has been delayed and has been re-scheduled for completion, commissioning and handover by the end of June 2023. The delay is attributed to logistical constrains and the transition processes of the contractor from CANSTRUCT to MTC.

Contracts

PROJECT/CONTRACT	CONTRACT SUM	WORKS STATUS
Water Office Building (Ames Construction) – Donor Funded	\$285,987.00	Funds defaulted. Construction is now NUC funded and constructed by in-house employees. Building as at 50% completion.
New Excavator Purchase	\$107,000	Contract for the supply awarded and acquisition of equipment is complete
New 1.1 MW Cummins Engine	\$350,000	Contract for the supply awarded
Generation office (Rephidim Construction)	\$52,645.00	Progressing design and layout. Pending construction. Contract terminated due to non-compliance and performance. In-house is being considered
Warehouse refurbishment & Office building (Aidon Construction)	\$32,059.60	Contract completed.
Security Services Contract	\$663,562	Performance Review underway and Comparison to explore to have the service in-house
Hire Tanker Contracts	Fixed Rates Apply	Rates are still under review

Financial Performance

NUC's financial performance for Year-to-Date to December 2022 shows negative earnings before tax (EBIT) of \$1,742,682. This negative performance has been, for the most part, a result of the general increase in fuel prices globally and has affected NUC bottom-line.

More than 50% of NUC operational budget comprises of fuel usage. The first six months saw an exponential growth in fuel prices from \$1.2243 per litre (inclusive of fees and charges) to \$1.72 per litre (inclusive of fees and charges). The fees and charges totaling 8.349% include Terminal rehabilitation fee of 3%, GON throughput fee of 3% and Land lease use levy of 2.349% for every purchases of fuel.

More explanations are provided further below. However, the profit and loss statement for the period ending 31 December 2022 is tabulated below:

Description	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	YTD
Income							
Electricity income	\$ 1,560,140	\$ 1,638,801	\$ 1,825,733	\$ 1,682,293	\$ 1,657,650	\$1,662,145	\$ 10,026,761
Water income	\$ 222,974	\$ 267,324	\$ 301,373	\$ 302,493	\$ 275,646	\$ 317,245	\$ 1,687,056
Other revenue (including release of deferred Income)	\$ 72,916	\$ 72,916	\$ 72,916	\$ 72,916	\$ 72,916	\$ 72,916	\$ 437,494
Total Income	\$ 1,856,030	\$ 1,979,041	\$ 2,200,022	\$ 2,057,702	\$ 2,006,212	\$2,052,306	\$ 12,151,311
Expenses							
Electricity:							
Staffing (Inc. Expat Housing)	\$ 185,368	\$ 152,107	\$ 144,782	\$ 148,954	\$ 210,255	\$ 148,480	\$ 989,926
Fuel & Oil	\$ 983,561	\$ 1,121,753	\$ 1,214,245	\$ 1,187,513	\$ 1,368,181	\$1,448,124	\$ 7,323,376
Repair & Maintenance	\$ 70,526	\$ 154,197	\$ 85,575	\$ 301,161	\$ 91,625	\$ 23,204	\$ 726,289
Other	\$ 1,787	\$ 452	\$ 2,556	\$ 4,800	\$ 6,611	\$ 6,083	\$ 22,289
Total Electricity	\$ 1,241,242	\$ 1,428,509	\$ 1,447,158	\$ 1,642,428	\$ 1,676,672	\$1,625,871	\$ 9,061,880
Water:							
Staffing (Inc. Expat Housing)	\$ 65,402	\$ 65,101	\$ 58,865	\$ 59,051	\$ 96,230	\$ 55,252	\$ 399,901
Repair & Maintenance	\$ 25,044	\$ 1,922	\$ 2,976	\$ 585	\$ 13,908	\$ 13,843	\$ 58,278
Rental vehicle	\$ 31,355	\$ 87,085	\$ 94,300	\$ 85,610	\$ 101,795	\$ 82,600	\$ 482,745
Other	\$ 6,422	\$ 8,397	\$ 11,592	\$ 12,162	\$ 4,902	\$ 4,245	\$ 47,719
Total Water	\$ 128,223	\$ 162,505	\$ 167,733	\$ 157,407	\$ 216,835	\$ 155,940	\$ 988,643
Corporate:							
Staffing (Inc. Expat Housing)	\$ 73,593	\$ 85,031	\$ 108,785	\$ 106,609	\$ 151,646	\$ 84,978	\$ 610,642
Training	\$ -	\$ 1,640	\$ 740	\$ 1,552			\$ 3,932
Repair & Maintenance	\$ -	\$ 2,605	\$ 7,870	\$ 2,504	\$ 5,070	\$ 4,705	\$ 22,753
Freight & Duty	\$ 2,175	\$ 1,573	\$ 23,566	\$ 115,251	\$ 42,698	\$ 48,973	\$ 234,236
Security expense	\$ 58,301	\$ 52,415	\$ 81,468	\$ 54,672	\$ 55,036	\$ 56,606	\$ 358,498
Telephone/Fax/Internet	\$ 23,131	\$ 29,258	\$ 47,944	\$ 22,727	\$ 47,990	\$ 23,501	\$ 194,550
Interest expense-IFRS 16	\$ 89,516	\$ 89,516	\$ 89,516	\$ 89,516	\$ 89,516	\$ 89,516	\$ 537,096
Other	\$ 10,999	\$ 12,944	\$ 31,468	\$ 55,237	\$ 41,592	\$ 54,584	\$ 206,823
Total Corporate	\$ 257,714	\$ 274,982	\$ 391,355	\$ 448,068	\$ 433,548	\$ 362,864	\$ 2,168,530
Total Operational Expenses	\$ 1,627,179	\$ 1,865,995	\$ 2,006,247	\$ 2,247,904	\$ 2,327,054	\$2,144,675	\$ 12,219,053
EBITDA	228,851	113,046	193,775	(190,202)	(320,843)	(92,369)	(67,742)
Depreciation							
Electricity	\$ 185,314	\$ 185,314	\$ 185,314	\$ 185,314	\$ 185,314	\$ 185,314	\$ 1,111,884
Water	\$ 14,634	\$ 14,634	\$ 14,634	\$ 14,634	\$ 14,634	\$ 14,634	\$ 87,805
Corporate	\$ 19,253	\$ 19,253	\$ 19,252	\$ 19,252	\$ 19,252	\$ 19,252	\$ 115,515
Depreciation expense-ROUA	\$ 59,956	\$ 59,956	\$ 59,956	\$ 59,956	\$ 59,956	\$ 59,956	\$ 359,736
Total Depreciation	\$ 279,157	\$ 279,157	\$ 279,156	\$ 279,156	\$ 279,156	\$ 279,156	\$ 1,674,939
Total Expenses	\$ 1,906,336	\$ 2,145,152	\$ 2,285,403	\$ 2,527,060	\$ 2,606,211	\$2,423,831	\$ 13,893,993
Add Other income							
Covid Relief - ex Gratia Payment	\$ 134,000	\$ 3,000				\$ 147,800	\$ 284,800
Less Other Expenses							
Covid Relief - ex Gratia Payment	\$ 134,000	\$ 3,000				\$ 147,800	\$ 284,800
Earnings Before Tax (EBT)	\$ (50,306)	\$ (166,111)	\$ (85,381)	\$ (469,359)	\$ (599,999)	\$ (371,526)	\$ (1,742,682)
	Jul	Aug	Sep	Oct	Nov	Dec	YTD
Cash Sales Income	\$ 806,378	\$ 847,226	\$ 884,450	\$ 846,697	\$ 775,366	\$ 862,607	\$ 5,022,724
Credit Sales Income	\$ 1,049,652	\$ 1,131,814	\$ 1,315,572	\$ 1,211,005	\$ 1,230,846	\$1,189,699	\$ 7,128,587
	1,856,030	1,979,041	2,200,022	2,057,702	2,006,212	2,052,306	12,151,311

Financial results compared with budget and commentary

Revenue

NUC's income from electricity sales, water sales and other income sales total to \$12,151,311 for the 6-month period. This achievement when compared to its budget is below its target by 8%.

Actual electricity income was \$10m, down by 11.4% when compared to budget. When evaluated further, the target for government revenue was underachieved which contribute to the variance. Actual water income was \$1.69m down by 10.6% when compared to budget. When evaluated further, the target for government revenue was also underachieved, hence contributing factor. Other income was not budgeted for and NUC recorded \$0.4m resulting from release of deferred Income.

Expense

In terms of operating expenses, NUC spent \$12.2m in the reporting 6 months' period. This is 5% above the budgeted allocation of \$11.6m. What's not obvious is the fuel prices increase as it affects all other expenditure budgeted for the period.

Total operational expenses included \$7,323,376 (HY2022: \$5,480,030) for diesel fuel and oil expenses; \$2,000,469 (HY2022: \$1,891,912) staffing expenses; \$1,267,312 (HY2022: \$1,731,495) for repairs and maintenance expenses and \$1,605,144 (HY2022: \$1,733,121) admin expenses in both the energy and water services.

Comparison with previous year and commentary

On the revenue front, this year's half year performance was down by 4.6% overall when compared to last year same period. That is, NUC achieved \$10m this year as oppose to \$10.9m last year for electricity sales whilst \$1.69m this year as oppose to \$1.75m last year for water sales. These two half years' report depicts two scenarios of lockdown and reopening of boarder.

On the expenses side, total operating expenses this year's half year performance is \$12.2m, up by 12.4% compared to \$10.9m last year. Contributing factor to the increase in expenditure is the increase in fuel prices. Last year same period, NUC was paying \$5.5m, as oppose to this year being \$7.3m, a \$1.8m extra which has to be funded from NUC cash flow.

Prediction of the likely end of financial year result

The reforecast for 12 months will largely depend on the volatility of fuel prices. In its budget, NUC estimate its fuel prices to be around \$1.2099 per litre. If the current trends of fuel prices continue to rise, then NUC will expect a further adverse effect on its bottom line not to mention abnormal services. The commissioning of 6MW solar plant is scheduled at a date after this financial year. That benefit in terms of fuel offsets will come in the next financial year. All else equal, the reforecast for 12 months will likely double the half year performance.

Having said that, NUC is doing its best to concentrate its efforts in ensuring that it continues to provide services of electricity and water to its valuable customers at the same time monitoring its performance towards achieving its target. NUC is further exploring options to allow timely billing, ensuring debts are recovered and smart spending within its budget limits on a monthly basis.

Any issues that need to be addressed or actions being taken to remedy concerns or under performance

NUC currently covers its full cost of fuel for the generation of electricity and the production of water.

However, the current tariff mechanism does not address the fluctuations in diesel prices. There is no established separate electricity fuel charge (\$/kWh) that would be adjusted on a monthly basis to accommodate the variability in fuel price.

Similarly, NUC has been unable to implement an adequate operating reserve that would allow the use of the operating reserve funds to pay for fuel costs that exceed the initially budgeted amount.

NUC management and Board is relooking at options in order to be sustainable if not break even. This includes making submission to government to relook at lowering the percentage of fees and charges and/or government assistance. Since January 2022, a new levy of 2.5446% was introduced (land lease levy) in addition to the existing 6% fees and charges. This extra levy, in our view needs to be reviewed and removed.

Community Service Obligation

The Government of Nauru has established a CSO framework that acknowledges that the government has requested NUC to pursue a social policy objective that undermines NUC's ability to be fully commercial and to generate sufficient revenue to comply with its primary objective as outlined in section 22 of the Public Enterprise Act 2019 of being a successful business.

The community service obligation provides a life-line tariff for NUC residential customers to enable NUC to provide affordable electricity through the life-line tariff for up to 200 kWh of power per month.

The revenue received by NUC from the CSO is to support the reduction in residential tariff rates charged by NUC to its residential customers for the first 200 kWh of each month. NUC receives the CSO in consideration of the cost of providing a non-commercial activity, so that NUC is able to earn sufficient revenue to be commercial.

To be considered a CSO certain conditions are required to be met as set out under section 25 of the PE Act. These state that:

- there must be a specific request from Government to NUC to pursue the activity and there must be a negotiated outcome;
- the outcome would not be pursued if NUC were operating on a purely commercial basis;
- there is a specified social objective;
- the CSO is costed at avoidable cost i.e., the marginal cost of service;
- funding is from the budget.

NUC's revenue and expenditure forecasts are based on current tariff charged to customers and the continuation of the Community Service Obligation social policy contribution.

The key assumptions for the Community Service Obligation are:

- the Government continues to fund its social policy through the Community Service Obligation for the foregone revenue from the lifeline tariff applied to residential customers;
- cash transfer from Government to NUC is assumed to be done on a monthly basis via invoice for actual foregone electricity revenue for the month;
- The lifeline tariff threshold for electricity domestic customers will remain at 200kWh per month.
- The lifeline tariff for residential customers remains at \$0.22 cents per kWh up to the threshold of 200kWh per month;
- The Community Service Obligation lifeline rate is maintained at \$0.25 cents per kWh up to the threshold of 200kWh per month for residential customers;
- An increase in the number of residential customers FY2022-23 is forecasted to be 291. An average of 22 new customer connections per month over the period; and
- The forecasted Community Service Obligation requirements for FY2022-23 will be \$1,667,200.

In its 2022-23 Budget, the Government of Nauru has approved \$1,667,200 to cover for the marginal cost of service provided by NUC.

Feed-in Tariff Scheme (Buy Back Scheme)

Background

On 26 January 2017, Cabinet approval (Cabinet Submission no. 920/2016), stated that NUC would buy excess electricity generated from renewable energy system at the tariff of \$0.2005 / kWh and further approved the NUC CEO to sign a Power Purchase Agreement (PPA) with customers.

The Feed-in-Tariff rate was set at \$0.2005 / kWh and has remained unchanged since 2017. The objective of the Electricity Feed-in-Tariff Scheme – Solar Systems was to:

- encourage the uptake of residential rooftop solar PV in Nauru;
- improve the affordability of solar PV for residential customers;
- reduce residential energy bills through energy savings;
- support the achievement of the National Renewable Energy Target of 50% of electricity generated from renewables; and
- reduce GHG emissions from diesel generators.

Whilst the Feed-in-Tariff requirement places an obligation on NUC to buy excess electricity from renewable energy systems at the tariff of \$0.2005 / kWh, the arrangement does not discriminate between residential, commercial or industrial customer-owned solar, donor funded installations, nor determine the applicable size of the customer-owned solar installation to which the feed-in tariff should apply.

NUC pays a \$0.2005 / kWh Feed-in-Tariff for each kWh delivered to the grid to residential, commercial and government customers, with the exception of Nauru College who have 30 kW rooftop solar installed.

A new Grid Connect Manual is now with Ministry of Energy for Cabinet approval.

Once this manual is approved the new policies dictated within can be implemented and should clear out any inconsistency in the application of the Feed-in Tariff to our Roof Top Solar customers.

Customer Rooftop Solar Installations

Currently there is 1571.5 kW in customer-owned solar PV existing in Nauru as of December 2022.

This comprises:

- 382.5 kW installed capacity of rooftop solar PV sized at 10 kW or less. These are primarily residential rooftop solar.
- 30 kW installed capacity of rooftop solar PV sized at 30 kW;
- 236 kW installed capacity of rooftop solar PV sized between 30 kW and 100 kW; and
- 619 kW installed capacity of rooftop solar PV sized above 100 kW.
- 154 kW installed capacity is non-grid connected roof top. These customers do not export any energy to the grid.
- And the 150kW ground connected solar site for the Meneng Hotel

The table below depicts the total solar generation capacity on island as of December 2022

Solar Installation type	Generation capacity
Grid – Connect Roof Top Solar Sites	1,571.5 kW
NUC'S Ground Mounted Solar Site	1,600kW
Total Solar Generation Capacity - kW	3,171.5 kW

NUC Feed-in Tariff Policy

The NUC Feed-in Tariff has been set by The Government of Nauru back in 2017 and is currently in use with current grid connect customers.

However, through the SMARTEN project and consultation with stakeholders and NUC, has developed a Grid Connect Manual that establishes the guidelines and rules to be applied to address the inconsistencies and to ensure the continued uptake of renewable energy particularly rooftop solar to remains economically and financially sustainable.

The manual sets out to:

- To specify the minimum design and installation requirements, connection type and metering arrangements for small scale grid connect solar PV system for connection to the NUC network
- To document a guide for the NUC customers, designers and installers on buying household solar modules, inverters and balance of system components for grid connection
- To document the solar PV connection process guiding the NUC customers through the connection process outlining the steps and provide access to relevant applications forms
- To set out required standards and rules for all types and capacities of roof top installation on Nauru.
- Minimum feed-in tariff to be applied to residential roof-top solar PV installations connected to the grid;
- Requirements for a qualifying customer with a qualifying solar installation.

Appendices

Appendices 1: Annual Work Plan 2022-2023

Power Generation	
Thermal	Renewable Energy
Resource shortage	Maintenance Plan
Capacity Building	Capital Reserve and Budget
Gender and Social Inclusion	Resourcing and Training
Environmental Compliance	Gender and Social Inclusion
Maintenance Plan	Budget and reporting
Budget and reporting	Environmental Management
OHS&E	OHS&E

National Control Centre	
Budget Forecasting & Reporting	Succession Planning
Training – Technical	Technology Advancement
Monitoring	Efficiency and Productivity Gains
Network Management	Load Sharing
Reliability and Security of Supply	Call Centre Operations (Outages and afterhours operations)
OHS&E	Environmental Management (Noise, fuel and fumes)
Switching operations	Permits
Resource Management	Emergency Response
Generation Dispatch Plan	Shift Operations
Operator Fatigue Management	

Distribution Network Services	
Customer Connection and Metering	Distribution O/H & U/G
Inventory Management	Low Voltage Grid Refurbishment
Customer Grid Connection Rules	Preventative Maintenance Plan
Standards and Compliance	Vegetation Management Plan
OHS&E	Asset Inspection Program
Budget and reporting	Resourcing
Roof Top Solar Installations	Inventory
Regulatory Program	Succession Planning
Energy Efficiency	TNA – Capacity Building
Resourcing	Structure – Multi-skilling
Gender and Social Inclusion	Budget and reporting
TNA – capacity building	Planning (network)
Public Safety	OHS&E

Water Production, Storage and Delivery	
Storage Management	Standards Compliance
Tariff and Charges	Water Safety – Quality
Gender and Social Inclusion	Awareness – Conservation and Use
Demand Management (Drought/Environment/Tankers)	Asset Management
Budget and Reporting	Maintenance Planning
Resourcing	Technology
Environmental Management	Monitoring System
Dispatch and Delivery Program	KPI's and Targets
TNA – Capacity Building	Water Module
Succession Planning	Rainfall Data Collection
Customer Management	Complaint Management
Operations – Unscheduled demand, Theft, fleet management	Efficiency / water losses
Shift operations	Driver fatigue and stress
Structure review – efficiency gains	

Corporate Services			
Human Resources	ICT	Contracts Safety and Security	Procurement and Supply Chain
<ul style="list-style-type: none"> • TNA – Capacity building • Recruitment and Selection Process Management • HR Systems management and maintain • ESS, PG support • Manage staff welfare and well being • Communication and engagement (internal customers) • Reporting • HR Policy Management and Review • Monthly reporting and updates • Customer Service 	<ul style="list-style-type: none"> • Training of IT services to other units • Transparency • Record Management System • Update of ICT Asset Register • ICT Asset Audit • ICT License Audit 	<ul style="list-style-type: none"> • Contract Management • Safety Manual • Evacuation Plan • Drill schedules • Emergency Response Management • TNA – Capacity Building • Training and Development in OHS&E • Reporting to EMG and Board • Compliance Plan • Communication and Engagement Plan • Waste Management Environment and OH&S Policy • Budget Management • Safety Policy 	<ul style="list-style-type: none"> • Procurement Manual • Inventory Manual • TNA – training • Stock taking Procedures • Record and Reporting System • Fleet Service Schedule / work plan • Fleet Management Plan • Property Management Plan • Fleet structure review

Retail – Customer Service Centre	
Customer Service Training	Customer Management System
Customer Service Charter – Water	Customer Service Charter – Electricity
Customer Survey	Budget and Reporting
Customer Awareness Program	Water Module – TNA
Customer Billing	Customer Engagement Plan
Energy Efficiency	Water Conservation and Savings
Water Safety	Electricity Safety
Roof Top Solar	Customer Connections
Multi-skilling	Retail Business Hours
Succession Planning	Revenue Reconciliation and Banking
Technology advancement	Public Safety
OH&S	

Corporate Finance	
Budget Forecasting & Reporting	Financial Audits
Cashflow management	Expenditure Management
Asset Management FAR	Succession Planning
Payment/Payroll	Community Service Obligation
Land lease Management	Financial Approvals and Processes
Financial Management Manual	Technology Advancement
Financial Processes and Procedures	Finance 101 Training
Budget 101 Training	Business Tax, Employee Tax, Super Payment Process (on-time)
Compliance and Governance	IFRS

Appendices 2: Current Electricity and Water Charges 2022-23

Electricity & Water Fees and Charges					
	Note	Tariff/Rate	Unit		
Electricity					
Residential Lifeline	A	\$ 0.22	kWh		
Residential Prepaid	A	\$ 0.47	kWh		
Residential Postpaid	A	\$ 0.48	kWh		
Commercial		\$ 0.71	kWh		
Industrial		\$ 0.70	kWh		
Government		\$ 0.74	kWh		
Feed-in Tariff	B	\$ 0.20	kWh		
Reconnection Fee					
		\$ 150.00	per event		
Meter Tampering/By Pass Fine Residential	C	\$ 1,000.00	per meter		
Meter Tampering/By Pass Fine Commercial	C	\$ 10,000.00	per meter		
Reconnection after tampering		\$ 100.00	per meter		
Single Phase meter		\$ 120.00	per meter		
Three phase meter		\$ 445.00	per meter		
New Single Phase Pole Connection		\$ 50.00	per connection		
New Three phase Pole Connection		\$ 100.00	per connection		
New Connection Single Phase		\$ 50.00	per connection		
New Connection Three Phase		\$ 150.00	per connection		
Water					
Residential		\$ 0.0084	Litre		
Commercial/Industrial		\$ 0.0118	Litre		
Government		\$ 0.01553	Litre		
Residential Delivery <5,000L		\$ 5.00	per truck		
Residential Delivery >5,000L		\$ 10.00	per truck		
Commercial Delivery		\$ 263.49	per truck		
Government Delivery		\$ 165.00	per truck		
Truck Owner Delivery		\$ 117.25	per truck		
Fresh Water Delivery via Pipe		\$ 0.0118	Litre		
Sea Water Delivery via Pipe		\$ 0.0030	Litre		
Corporate					
Cash Power After Hours		\$ 15.00	per top up		
Labour Hire		\$ 15.00	per man hour		
Cherry picker Hire		\$ 90.00	per hour		
Crane Truck Hire		\$ 100.00	per hour		
Excavator Hire		\$ 90.00	per hour		
Fork Lift 3.5T Hire		\$ 60.00	per hour		
Fork Lift 2.5T Hire		\$ 45.00	per hour		
Note A					
Each residential pre-paid customer is provided 200kWh per month at the residential life line tariff. Usage in excess of 200kWh during the month is charged at the residential tariff.					
Note B					
Feed-in tariff applies to excess energy supplied to the grid by residential 'qualifying' customers who have installed qualifying' grid-connected roof top solar panels.					
Note C					
Where a customer is found guilty of an offence NUC, at its discretion may estimate the customers usage during the relevant period and require that customer to make good the full payment for usage including any subsequent fines prior to reconnection of the customers supply.					

Appendices 3: Financial Projections 2022-2023

On a cash basis NUC's tariffs for the financial year 2022-23 is projected to be sufficient to cover the expenses for operating and maintenance in order to provide electricity and water services at the current levels.

NUC's projected revenue leaves no contingency for increases in fuel prices or other unanticipated expenses outside the projected forecast.

NUC is therefore required to delay capital projects and expenditure or reduce other potentially necessary expenses and continues to make decisions based on limited revenue for its day-to-day operations.

Therefore, NUC's capital budget only includes current year investments, with no funds being set aside for future use or contingency in the event of unexpected increases in fuel price outside NUC projections.

The following table provides a summary of NUC financial projections for 2022-23.

BUDGET COMPONENTS	Budget
	FY2022/23
Electricity Income	22,640,510.58
Water Income	3,775,888.54
Other Income	
Total Revenue	26,416,399.12
Fuel & Oil Expenses (cogs)	11,944,798.91
Employment Expenses	5,110,054.91
Training and development	182,800.00
Financial Expenses	358,054.00
Fuel for Vehicles	439,606.09
ICT Expenses	392,866.76
Board Expenses	72,480.00
Repair and Maintenance	1,850,177.08
General & Administrative Exp	2,915,286.48
Total Expenses	23,266,124.24
EBITDA	3,150,274.89
Depreciation	2,700,000.00
EBIT	450,274.89
NPBT/(Net Loss)	450,274.89
Income Tax Expenses	112,568.72
NPAT /(Net Loss)	337,706.16
TOTAL OPERATIONAL EXPENSES (OPEX)	25,966,124.24
TOTAL CAPITAL EXPENSES (CAPEX)	4,706,000.00
TOTAL OPEX + CAPEX	30,672,124.24
TOTAL REVENUE	26,416,399.12
SURPLUS / (DEFICIT)	(4,255,725.11)

NUC Expense Budget Fuel and Lubricating Oil

NUC currently covers its full cost of fuel for the generation of electricity and the production of water.

However, the current tariff mechanism does not address the fluctuations in diesel prices. There is no established separate electricity fuel charge (\$/kWh) that would be adjusted on a monthly basis to accommodate the variability in fuel price.

Similarly, NUC has been unable to implement an adequate operating reserve that would allow the use of the operating reserve funds to pay for fuel costs that exceed the initially budgeted amount.

NUC has considered the following capped price per litre which includes Terminal Rehabilitation & Government throughput fees and the Land Lease Use Levy. Our assumptions are based on our trending analysis adjusting for the actual fuel price per litre over the last two years.

The following assumptions are made in relation to forecast expenditure for fuel and lubricating oil:

- The true cost of diesel fuel for the period 1 July 2022 to 30 June 2023 is forecasted to be \$1.19 to \$1.22 per litre.
- the current true cost of diesel is \$1.16 per litre (price increase effective January 2022). The current price is inclusive of Terminal Rehabilitation, Government Throughput Fee and Land Use Levy.

The introduction of additional renewable generation, specifically the opportunity to achieve 50% generation from renewable source will reduce Nauru's reliance on fossil fuels for the generation of electricity and subsequently the production of water. The impact of increased solar generation is assumed to offset the use of diesel fuel in April 2023 and beyond.