



January 2022

# Nauru Utilities Corporation

Half-yearly report 1 July 2021 to 31  
December 2021

**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 2021, in accordance with the provisions of section 77 of the *Public Enterprise Act 2019*.

Yours sincerely

Abraham Aremwa

***Chair***

28 January 2022

Carmine Piantedosi

***Chief Executive Officer***

28 January 2022

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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.

It is great to see NUC's operational performance, safety and work culture improve over this period. It is pleasing to see that our move to a more proactive customer focus and work culture is progressing, with all performance indicators showing a significant improvement towards achieving our objectives.

The move towards improved efficiencies and reliability and security of electricity and water supply have reached performance targets that support NUC's goal of placing NUC among the best performing Pacific Island utilities.

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

Chairperson of the Board of Directors.



## Chief Executive's Report

This half-yearly report for 2021-22 financial year provides an overview to what extent NUC has achieved its business goals as specified in its 5-year Strategic Plan 2021 – 2025, its Statement of Corporate Intent 2021 and our Annual Work Plan 2021-22.

NUC's financial performance for the period reflected a continued favorable outcome resulting in a positive financial trend from July to December 2021. NUC's revenue shows that it continues to be able to cover its operating costs including depreciation to date.

Increase demand for our electricity services and increase in demand in water sales for the 6-month period due to the continued dry spell have both contributed to the financial outcomes for the first half of the financial year.

For the 6-month period, diesel fuel prices have commenced to steadily increase as forecasted increasing our operating costs of energy generation as demand increases.

Operation and maintenance activities on our generation and distribution network ensured sufficient generation capacity to meet the demand each month for energy.

The continued dry spell has impacted on both electricity and water services, where water demand peaked at 1.5 megalitres per day in some months.

Previously, the drought had also seen 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.

Total electricity generated from renewable energy solar photovoltaic systems was 2,237,839 kWh for the 6-month period with 1,786,214 or 79 % exported to the grid. This accounted for 12% of energy delivered to our customers.

Carmine Piantedosi

Chief Executive Officer

# This Report

## *Purpose of the Report*

The purpose of this half-yearly report is to meet the obligations of Nauru Utilities Corporation (NUC) as contained within the *Public Enterprise Act 2019*, namely section 77 whereby 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.

NUC is required to submit its half-yearly report to the Responsible Minister and Accountable Minister not later than 2 months after the end of the first half of the financial year.

This half-yearly report states to what extent NUC has achieved the business goals specified in its statement of corporate intent for the current financial year and includes other matters that the Responsible Minister, after consultation with the Accountable Minister, has directed NUC to include.

## *Objective of the Report*

The objective of this report is to inform the Government of Nauru, as the owner and sole shareholder of Nauru Utilities Corporation, our stakeholders, and our customers, of:

- NUC's primary services and responsibilities.
- Significant activities for the July to December period of 2021 financial year, highlighting major projects, key achievements and outcomes, as they relate to the strategic objectives of the corporation contained in the 2021-2025 Strategic Plan.
- Financial management and performance of the corporation during the period July to December 2021, pursuant 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**



**Water Production**

**161,777,810 litres produced**



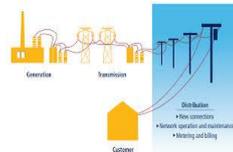
**Water Storage**

**4,286,974 litres in storage**



**Water Despatch and Delivery**

**148,363,028 litres delivered**



**Electricity Generation**

**Diesel Generation (Sold): 19,082,234 kWh**

**Renewable Energy Generation: 2,237,839 kWh**



**Electricity Customers**

**3972 Customers comprising:**  
**3453 Domestic Customers**  
**432 Commercial Customers**  
**31 Industrial Customers**  
**56 Government Customers**



**Water Customers**

**2020 Customers comprising:**  
**1908 Domestic Customers**  
**25 Commercial Customers**  
**30 Industrial Customers**  
**57 Government Customers**

## ***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 **N**auru we will **A**chieve, with a **U**nited effort and doing things **R**ight first time, **U**topia: 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:

<b>Core Value</b>	<b>Description</b>
<b>Impartiality</b>	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.
<b>Morality</b>	NUC staff shall ensure they uphold standards of right and good conduct.
<b>Professionalism</b>	NUC staff shall perform their duties with the highest degree of competence and skills.
<b>Accountability</b>	NUC staff shall perform their duties in a manner that shows readiness to take full accountability and responsibility for their actions.
<b>Consistency</b>	NUC staff shall ensure uniformity, predictability and coherence in accordance with our Code of Conduct and Core Values.
<b>Transparency</b>	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 2021, NUC through its Strategic and Annual Work Plan 2021 pursued the following five (5) Business Objectives:

- ✚ Customer Focus: NUC implemented strategies to shift from an “operational” focus to a customer centric organisation. NUC is committed to improving our service delivery to benefit our customers and stakeholders. Underpinning our approach are our fundamental commitments which lay the foundation for our strategic priorities and initiatives.

They are:

- Delivering Safe, Reliable, Affordable and Sustainable Electricity and Water Services
- Communicating and Engaging with Customers and Stakeholders
- Delivering Customer Outcomes
- 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 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.

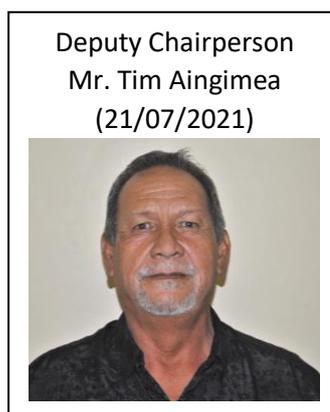
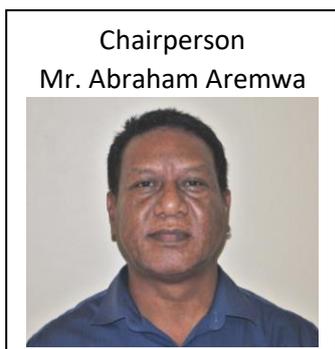
NUC utilised a range of performance measures and indicators to assess its operational performance. These included, among other things:

- core indicators such as operating cost per connection;
- performance scores based on production or cost estimates;
- benchmarking; and
- customer survey benchmarking by identifying customer perceptions.

The half-yearly report has translated each strategic objective into key outputs and outcomes, Key Performance Indicators (KPIs) as well as operational activities. Accordingly, detailed operational activity schedule have been presented in this report including:

- ✚ Summary of Program of Work (Appendix 1)
- ✚ Operational Performance Parameters (Appendix 2)
- ✚ Current Electricity and Water Charges (Appendix 3)
- ✚ Financial Projections (Appendix 4)

## *Nauru Utilities Corporation Board*



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 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 Leadership Team*



## *COVID-19 Pandemic*

In developing this half-yearly report, regard has been given to the current pandemic and its impact on our organisation.

The Asian Development Bank forecasted that developing Asia would contract by 0.7% in 2020, its first contraction in six decades, however growth would rebound to 6.8% in 2021.

According to ADB, the downturn is broad-based—three-fourths of the region's economies are expected to contract this year with the exception of the People's Republic of China (PRC).

ADB indicated that depressed demand and low oil prices have offset supply disruptions, keeping regional inflation at 2.9% in 2020, and trimming it to 2.3% in 2021.

The threat of a prolonged COVID-19 pandemic is the main risk to our outlook. A return to more stringent containment measures could slow or even derail recovery and possibly trigger financial turmoil.

The Pacific is now expected to sustain another year of contraction in 2021 after a forecast of 1.4% growth in the Asian Development Outlook was revised down to -0.6% in the Asian Development Outlook Update.

The regional outlook also reflects the adverse impact of continuing coronavirus disease (COVID-19) containment measures, particularly border restrictions, on business activities and tourism in other neighbouring Pacific Island Countries.

The sub-region is forecast to rebound by 4.7% in 2022, from the previous projection of 3.8%, as wider vaccination coverage permits progressive border reopening which is expected to boost trade and tourism.

There remains uncertainty around the cost impact of the pandemic and it is not clear whether those costs could be mitigated by NUC. In addition, NUC is concerned about the adverse effect that the pandemic may have on future prices faced by customers.

COVID-19 has delayed implementation of some planned projects in both the energy and water sectors, and other systems in Nauru.

The COVID-19 pandemic potentially affects all of our operations in NUC and all of our customers. It has become clear that the impacts of COVID-19 are substantial, and further consideration will need to be made during the 2021 – 22 period.

A balanced treatment of all the impacts of the pandemic will require NUC to undertake adequate consultation with affected stakeholders.

## Achievements against Key Performance Targets

### *Workplace Health and Safety*

As NUC moves to a proactive safety culture, this performance is an indicator of our progress on that journey. While our accident and incident indicators are impressive with zero incidents reported during this half year period, it is evident that we will need to focus on improving leadership, behaviour and personal responsibility. In addition, we are raising awareness of critical risks through behavioural based safety initiatives and continued improvements to our work health and safety procedures.

The introduction of our staff Workplace Occupational Health and Safety Committee with representatives from the various business units within NUC supports our safety objectives.

The Lost Time Injury (LTI) for the six-month period was zero and days lost due to an incident and /or injury are also zero.

The following table summarises the number of hazards identified and actioned including non-compliances noted during the period July to December 2021.

Month	Hours Worked	No. of Hazards	Incidents Reported <sup>1</sup>	Accidents Reported <sup>2</sup>	LTI	Non-Compliance
July	38,197	TBC	TBC	0	0	19
August	37,640	TBC	TBC	0	0	14
September	36,696	TBC	TBC	1	0	7
October	52,812	TBC	TBC	0	0	4
November	34,906	TBC	TBC	1	0	5
December	36,125	TBC	TBC	0	0	9

There were no Lost Time Incidents recorded for the 6-month period to December 2021 involving NUC employees.

Non-compliance activity included failure to wear appropriate personal protective equipment within the workplace.

Weekly team meetings are held to report on potential hazards and enforce compliance requirements with workplace safety obligations.

Monthly safety committee meetings were held with various representatives from different departments. The committee comprises both male and female representatives. The committee reviews OH&S reports and provides updates and communications to all staff on the various safety and security concerns to be addressed on an ongoing basis with NUC management.

Workplace health and safety issues and action plans are reviewed weekly at all team meetings including management team meeting to ensure issues and actions are resolved or addressed.

<sup>1</sup> Validated data unavailable at time of report publication.

<sup>2</sup> Accidents reported to NUC that involved electrical work being undertaken by the members of the public resulting in serious injury, electrocution or fatality.

## 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 at 31 December 2021 was 166 an increase to date of 10% from 2020 financial year. The employee profile to 31 December 2021 compared to the 2020 financial year is shown below.

Category	2020		2021 (at 31 December)	
	Number	(%)	Number	(%)
Male	130	80	133	80
Female	32	20	33	20
Expatriate (inclusive)	14	9	13	8
<b>Total Number of Employees</b>	<b>162</b>	<b>100</b>	<b>166</b>	<b>100</b>

There were a number of staff movements in the period reflecting an overall increase in full time employees in the 2021 half yearly. This included a decrease in expatriate staff and the recruitment of staff primarily in the water, power distribution and property services areas.

### Gender equality and Social Inclusion

NUC has commenced gender inclusive project employment, creating positions for female technicians within the renewable energy business. NUC's participation in Career Open Days at various Schools encourages young women to consider a career path in the technical and engineering fields relating to power and water sectors.

Our review of the Human Resource Management Policies and Procedures including the development of a Gender Strategy which includes actions that support women in leadership and technical positions has continued to be implemented in this period.

NUC staff turnover from 1 July to 31 December is shown in the following table.

Month	July	August	September	October	November	December
<b>Turnover</b>	1	6	3	2	2	0

Staff turnover reflects the number or percentage of workers who left NUC and were replaced or being replaced with new employees over the period. This KPI is helpful in understanding the reasons for the turnover and assists in estimating the cost-to-recruit for budget purposes.

Employee turnover for the half year 1 July to 31 December reduced from 12% in 2020 to 8% for the current period.

## Capacity Building

Our people are an integral part of NUC's achievements. They are 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 focussed 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. The number of training person days in the six-month period to 31 December 2021 was 100. This accounts for less than 1% of the total work person days during this period.

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

Type of Training	Number of participants
Diploma Professional Business Management	2
Basic Maths	3
Intermediate Computing	4
Diploma in Project Management	2
Welding Fabrication Certificate II	7
Basic Safety Training First Aid and Fire Safety	All
Total	<b>160</b>

Staff underwent compulsory industry specific on the job training including basic safety, first aid and fire safety. Staff have attended USP undergoing professional development in Business Management, Project Management and Business Administration and Professional Diplomas sponsored by NUC.

Seven employees are currently on long term study leave as follows:

Number of Employee	Study Program	Institution/Sponsor
1	Certificate IV Electrical Engineering	Fiji National University/NUC
1	Certificate IV Electrical Engineering	Fiji National University/NZ MFAT
1	Degree in Management	Fiji National University/ NUC
1	Degree in Management	Toowoomba University/AusAID/NUC
1	Diploma in Accounting	USP Pacific TAFE/NUC
1	Diploma in Mechanical Engineering (Plant Maintenance)	Fiji National University/NZ MFAT
1	Diploma in ICT	USP/ NUC

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 summarizes the Organisations KPI's for the period 1 July to 31 December 2021.

Month	No. of Employees	Training (Days)	LWOP	AWOL	Rec Leave	Spec. Leave	Sick Leave	LWHP	LPHP	(%) O/T
JULY	162	17	376	1442	1224	926	436	27,807	38,197	27
AUG	161	14	168	1638	1608	1040	672	26,824	37,640	29
SEPT	155	19	172	1351	2040	1268	762	24,954	36,696	32
OCT	161	19	1616	1395	2692	674	968	38232	52812	28
NOV	167	25	720	1517	2716	480	640	24,970	34,906	28
DEC	166	6	568	1509	2956	944	788	23,676	36,125	34

Attendance Without Leave (AWOL) accounted for 5.7% of total hours worked which was higher than the same period last year, while Recreational Leave accounted for 7.9% of actual hours worked for the 6-month period reflecting an increase from the same period last financial year.

For the same period, Special Leave accounted for 3.2% of total hours worked an increase from the same period last year and Sick Leave accounted for 2.5% of total hours worked similarly reflecting an increase from the previous period.

### Productivity

Hours worked and hours paid per employee decreased from 27% in 2020 to 25% in 2021. The overtime rate for the half-year to December 2021 was 29% which is tracking slightly higher than the last period.

Labour Hours	2020	2021	½ year to date
Hours Worked	366,732	350,016	166,463
Hours Paid	504,113	466,406	236,376
Hours Paid/Hours Worked	1.375	1.332	1.41
Number of employees	161	161	166
Hours worked/employee	2278	2,174	1,002
Hours Paid/employee	3,131	2,896	1,424

## *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 during the 6-month period to December 2021 with a number of key activities completed to date. These activities included:

- Structured cabling from the 11kV switch room to the RO SCADA
- Structured cabling project for PPM, Planning and Finance office renovations commenced with the initial planning and mapping of the works finalised and materials and equipment requirements identified.
- Installation of new VIP Access CCTV System for Aiwo Power Station
- 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.
- STS TID Rollover for the new Suprima Software Upgrade – this remains an ongoing program of works.
- Ensured network connectivity to various departments e.g., Procurements and Contracts, Customer Service Centre and Fleet Section.

Importantly, work has commenced on NUC's Disaster Recovery Planning and Business Continuity Plan, with the aim of completing the final review of the plan in the second half of 2021-22.

NUC is currently developing its Intranet Site and is in the final stages of review. The intranet site will provide staff access to information relating to the business, including policy and procedures, business updates, and operational forms and published information such as reports, papers, and organisational performance reports.

The NUC ICT department has developed policies and procedures to safeguard NUC's ICT infrastructure. These included Information Management Framework, Information Security Policy, Data Protection Policy, Remote Working Policy and Acceptable Use Policy.

The ICT Helpdesk received a total of 598 requests for the period July to December 2021 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 no outstanding open tickets for the period.

<b>Month</b>	<b>Open Tickets</b>	<b>Closed Tickets</b>	<b>Total Number of Tickets</b>
July	0	0	85
August	0	0	69
September	0	4	96
October	0	2	76
November	0	2	130
December	0	4	142

Key services availability was fully operational for the period with zero down time.

SMS Power Top-up for the period NUC received a total of 137,568 (a 5% increase from the previous period) averaging around 22,928 SMSs per month.

Month	Total SMS
July	22,549
August	23,014
September	22,273
October	23,015
November	22,746
December	23,971

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 points.

CCTV monitoring equipment and cable installation works at the Aiwo Power Station site.



# Electricity Generation

## Diesel Generation

The current installation of diesel generation capacity adequately meets the maximum demand with an N-2 security.

This is achieved with the installation of medium speed generators and the high-speed diesel generators providing the required capacity to supply the maximum demand of the system with the loss of the two largest generators.

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

Generation Data	Station																		
	INSIDE POWER STATION (MEDIUM/LOW SPEED ENGINES)							OUTSIDE HIGH SPEED ENGINES					STANDBY ENGINES AT ESSENTIAL SERVICES						
Set Number	G1	G2	G3	G4	G5	G6	LACKSTAR	G2A	G2B	G3	G5	GON	MENENG	AIRPORT	SICAMP	RON HOSPITAL	PRISON 1	PRISON 2	
Engine Model	Ruston	MAN	MAN	Ruston	Cummins	Ruston	Cummins	Cummins	Cummins	Cummins	Cummins	Cummins	Cummins	Cummins	Cummins	Caterpillar	Caterpillar	Caterpillar	Caterpillar
Installed capacity Kw	2.40	2.85	2.85	3.00	1.00	2.40	1.00	1.00	1.00	1.00	1.00	0.50	0.50	0.50	0.32	0.50	0.50	0.10	0.10
Rated Capacity Kw	2000	2500	2500	2800	850	2000	800	800	800	800	850	450	450	450	300	450	450	100	100

The current available capacity for high-speed diesel generators is 4 MW. The current available capacity of medium speed diesel generators is 15 MW.

### Failure of G2B 1 MW Cummins Engine

In September 2021, the G2B 1 MW Cummins engine suffered a catastrophic failure as a result of a high temperature protection malfunction leading to extreme overheating of the main engine.

In October 2021, NUC sought to acquire a new replacement 1 MW Cummins engine in order to maintain the current level of security and reliability of supply for Nauru.

An open tender process was initiated, an evaluation of the submission conducted and evaluation report concluded with recommendation for the supply of a new Containerised KTA50-G3 Cummins Engine.

The need to purchase the new 1.1MW Cummins is to replace the failed G2B 1 MW unit to enable NUC to maintain N-2 security of supply with baseload thermal generation while the demand growth continues over this period.

NUC continues to anticipate significant growth in electricity and water 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 and RPC 2 are additional demands expected in the grid by Q1 of 2022.

While the 6MW Solar Development Project is planned for commissioning and operation in early 2023 it will provide alternative energy source from renewable energy production, however, it will not provide baseload 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.

The proposal to relocate the existing four containerized high-speed generators to the new solar project development site end of 2022 will provide additional security should prolonged cloud cover or failure of the solar plant be experienced.

NUC requires to maintain 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.

The following table provides NUC Power Operations Key Performance measures for the period July to December 2021.

Key Performance Indicators	July	August	September	October	November	December
<b>Generation Capacity</b>						
Total Installed Capacity (MW)	19.7	19.7	19.7	19.7	19.7	19.7
High Speed Installed Capacity (MW)	6.0	6.0	6.0	6.0	6.0	6.0
Medium Speed Installed Capacity (MW)	13.7	13.7	13.7	13.7	13.7	13.7
Total Available Diesel Capacity (MW)	15.75	15.75	15.75	15.75	15.75	15.75
High Speed continuous rated (MW)	4.0	4.0	4.0	4.0	4.0	4.0
Medium Speed continuous rated (MW)	11.75	11.75	11.75	11.75	11.75	11.75
Black-start continuous rated (MW)	0.8	0.8	0.8	0.8	0.8	0.8
<b>Renewable Energy Capacity</b>						
Total Solar PV installed (MW)	2.47	2.48	2.65	2.69	2.74	2.751
Total Roof-Top Solar (MW)	0.85	0.86	1.02	1.04	1.08	1.12
Total Ground mounted (MW)	1.625	1.625	1.625	1.625	1.625	1.625
<b>Generator Performance</b>						
Generator Availability (%)	79	86	84	89	88	92
Generator Maintenance Compliance (%)	94	93	95	97	96	95
Specific Fuel Consumption (kWh/L)	4.04	4.08	3.89	4.01	3.99	4.05
Specific Lube oil Consumption (kWh/L)	1069	1338	1191	1095	1326	893
Power Station Auxiliary (% of total energy produced)	1.34	1.41	1.50	1.46	1.48	1.42
<b>Fuel Reports</b>						
Lube oil (MG412) Usage (Litres)	2020	1610	1990	1950	1850	2050
Lube Oil (15W40) Usage (Litres)	1277	962	893	1222	675	2044
Diesel Fuel (Litres)	872,584	843,753	881,782	865,335	838,752	903,215
Diesel Price per month (\$)	0.9966	1.0243	1.0243	1.0291	1.0291	0.9302
Cost of Diesel Fuel per month (\$)	848,674	864,256	903,209	923,310	977,645	926,190
<b>Reliability of Supply</b>						
SAIDI (Planned)	24	98	39	15	56	57
SAIDI (Unplanned)	73	112	151	49	95	48
SAIFI (Planned)	0.38	0.99	0.40	0.46	1.43	0.34
SAIFI (Unplanned)	0.13	0.89	2.78	0.60	3.11	1.06
SAIDI (Total Customer Minutes)	98	210	190	62	152	105
SAIFI (Total Customer Outages)	0.51	1.88	3.18	1.06	4.54	1.40
<b>Energy Losses (Technical &amp; Non-Technical) (%)</b>	11	12	5	13	8	17

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.

<b>ELECTRICITY SALES ENERGY REPORT</b>							
		<b>2021</b>					
		July	Aug	Sept	Oct	Nov	Dec
<b>ENERGY SALES</b>	<b>Units</b>	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>
Residential @ \$0.22/kWh - prepaid	kWH	553,039	561,852	563,519	568,832	571,776	535,045
Residential @ \$0.47/kWh - prepaid	kWH	820,831	862,797	864,065	875,209	872,874	857,294
Domestic - Postpaid @ \$0.48/kWh	kWH	161,759	160,461	168,517	154,776	166,360	166,036
Commercial - Prepaid	kWH	325,936	269,502	288,979	300,645	328,535	361,935
Commercial - Postpaid	kWH	422,294	385,982	382,320	411,329	428,509	400,746
Government - Prepaid	kWH	49,160	34,703	58,549	38,178	53,492	31,732
Government - Postpaid	kWH	710,505	694,272	831,425	665,024	697,802	686,102
Industrial- Prepaid	kWH	20,857	7,857	14,429	6,143	11,143	18,857
Industrial- Postpaid	kWH	83,032	92,050	129,006	160,563	122,611	72,991
Total Domestic	kWH	1,535,629	1,585,110	1,596,100	1,598,816	1,611,009	1,558,375
Total Commercial	kWH	748,230	655,483	671,299	711,974	757,044	762,681
Total Government	kWH	759,665	728,975	889,974	703,201	751,294	717,834
Total Industrial	kWH	103,890	99,907	143,435	166,706	133,754	91,848
<b>Total Energy Sales</b>	kWH	<b>3,147,414</b>	<b>3,069,476</b>	<b>3,300,808</b>	<b>3,180,697</b>	<b>3,253,101</b>	<b>3,130,738</b>
Free issue (staff free bp up)	kWH	28,867	28,413	27,731	30,004	30,913	32,504
Board + NUC Minister	kWH	1,800	1,800	1,800	1,500	1,500	1,500
NUC houses	kWH	4,894	4,894	4,894	4,894	4,894	4,894
NUC offices	kWH	11,006	11,392	11,807	10,391	11,277	10,990

The average monthly energy distributed to customers was 3,180,372 kWh for the period to December 2021 and increase of 17% compared to the same period last financial year.

Energy demand for the 6-month varied by 3% with the total energy consumption for the period of 19,082,234 kWh.

Overall demand for electricity remained relatively steady over the 6-month period.

Non-revenue electricity totalled 284,559 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

### Solar PV Installations

The uptake for roof top solar PV installation continued to grow over the period with residential grid connected solar rooftop installations generating and exporting more electricity to the network from grid connected customers.

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

The total half-yearly result for renewable energy generation from 1 July to 31 December 2021 is set out below.

Renewable Energy Data 1 July to 31 December 2021							Total Half-Yearly Results
Description	July	August	September	October	November	December	
Grid Connected Customers Generation (kWh)	85,544	115,913	97,884	96,927	123,775	111,205	<b>631,248</b>
Total Ground Solar Generation (kWh)	248,751	274,875	256,262	265,238	244,988	201,605	<b>1,491,719</b>
Non-grid Customers Generation (kWh)	17,108	19,793	20,275	23,633	17,416	16,648	<b>114,873</b>
Total Solar Generation (kWh)	351,403	410,580	374,421	385,798	386,179	329,458	<b>2,237,839</b>
Total Exported to Grid (kWh)	289,271	327,815	299,900	314,614	309,102	245,512	<b>1,786,214</b>

Grid connected customer produced a total of 631,248 kWh, while non-grid customers produced 114,873 kWh for the same period.

Total generation from NUC ground mounted installations totaled 1,491,719 kWh.

The total solar generation produced was 2,237,839 kWh for the 6-month period with 1,786,214 kWh or 79% exported to the grid.

The total solar energy generated as a percentage of total energy sales for the period was 9%.

## New 6 MW Solar Development Project

### *Background*

NUC is responsible for energy generation and distribution, including water supply.

Nauru predominantly sources its energy through diesel power generators to supply energy to its customers as well as water production facilities.

About 9% of NUC's current energy demand is sourced from renewable energy, of which all is from solar power (PV) installations.

There is currently a 500-kW and 1.1-MW ground-mounted solar installations and a number of residences that have rooftop solar PV installations as detailed in the above section.

NUC's electrical network comprises 11 kV, 3.3 KV and LV 420/240-volt overhead lines and underground cables.

The Asian Development Bank (ADB) provided Government of Nauru (GoN) a transactional technical assistance (TRTA) to prepare a Nauru power expansion plan. The plan identified that a solar PV array and battery energy storage system (BESS) was to be constructed. ADB also provided GoN support to prepare a Feasibility Study for the recommended Nauru Solar Power Development Project which will comprise of a 6-MW solar PV plant coupled with a 2.5MWh<sup>3</sup> / 5.0MW<sup>4</sup> BESS with a SCADA installation.

In accordance with ADB procedures, advance recruitment of a Project Implementation Consultant has taken place with the contract awarded to GHD Consultancy. NUC with the PIC established a project management unit to manage the contractor CHEC-HNAC-Risen, plant procurement contracts and coordinate NUC obligations.

### *6MW Solar Development Project – 1 July to 31 December Progress Update*

The project includes the construction of a 6MW grid-connected solar power plant and a 2.5MWh, 5MW battery energy storage system to supply continuous power when solar energy is interrupted by cloud cover and to maintain network stability.

The system will be fully automated and integrated with the existing diesel generation system to optimise solar energy use, enable optimal battery energy storage system charging and discharging, and allow optimal shut-off of the diesel engines, which will reduce Nauru's reliance on diesel for power generation and decrease production costs.

Contract completion is planned for December 2023 to include a 2-year plant procurement contract defect liability period.

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<sup>3</sup> Energy storage capacity measured in **megawatt-hours** (MWh). Duration: The length of time that a battery can be discharged at its power rating until the battery must be recharged.

<sup>4</sup> Power capacity of the battery, which means that if the battery is fully charged, and discharged at its maximum power rating, it will provide energy for ½ an hour before needing a recharge. If it is discharged at less than its maximum rating, it could provide energy for a longer period of time

The scheduled completion and commissioning date of the solar plant is end of 2022, being fully operation in early 2023.

In the 6-month period to 31 December, design and documentation reviews have been carried following the submission of civil and electrical designs by the Contractor. A number of project plans and documentation required prior to the commencement of construction works have been submitted and approved. These included a Construction Environment Management Plan (CEMP) and Systems Engineering Management Plan (SEMP).

On October 5, 2021 the project development site was officially handed over to the Contractor to manage the safety, security and construction works for the 6 MW development.

NUC conducted a landowner forum on 11 December to inform and update the community on the progress of the project and the current activities on the site.

The mobilization of 45 personnel from China to Nauru for the construction of the solar project was completed with the arrival by charter flight in Nauru on 16 December 2021. All pre-departure and arrival requirements for COVID-19 taskforce and Immigration visas were cleared with all personnel cleared through quarantine.

Construction activities have commenced with actions being undertaken to meet the requirements of the CEMP and SEM. These include toilet facilities installed, security services updated, boundary surveys confirmed and site leveling pending commencement subject to approvals.

Contractor accommodation located at the site has commenced construction and is planned for completion end of January 2022. Alternative temporary accommodation has been provided while the campsite is completed.

Material and equipment are currently being shipped to Nauru from China, through the Solomon Islands and are scheduled to arrive in January 2022.

#### [Energy Efficiency and Demand Side Management Strategy](#)

NUC administers an energy efficiency rebate scheme funded by the IUCN which supports customers who wish to purchase energy efficient washing machines, refrigerators and freezers by providing a 30% rebate on the purchase price of the item if it meets the energy efficient set for that particular appliance. Uptake of the scheme has progressed slowly to date.

A total of 43 LCF rebate customer applications were received during the period 1 July to 31 December 2021.

37 applications were processed and approved for rebate, and 6 were declined for non-compliance. For this half year period a total of \$12,924 was paid to customers.

The initial LCF grant was \$176,035.52 of which \$56,779.27 has been paid out to date leaving a balance of \$119,256.25.

## Electricity Customer Connection Data

There was a total of 248 new customer connection applications received for the 6-month period, comprising primarily of residential customers, equating to approximately 41 applications for a meter connection per month.

A further 8 new commercial customer connections were received during the period.

The Customer connection and metering team attended to a total of 552 customer faults during the period averaging approximately 92 customer faults per month.

Total number of electricity customers to 31 December 2021:

<b>TOTAL NUMBER OF CUSTOMERS</b>					
	<b>Dom</b>	<b>Comm</b>	<b>Ind</b>	<b>GoN</b>	<b>Total</b>
Post-paid	35	47	5	50	137
Prepaid	3438	385	21	6	3850
Fixed rate	0	0	5	0	5
Removals	20	0	0	0	20
<b>Total</b>	<b>3453</b>	<b>432</b>	<b>31</b>	<b>56</b>	<b>3972</b>

## Distribution Network

The low voltage network (415/240V) 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.

A detailed program has been developed to determine the full scope of work to upgrade the network to the required standard. The cost of the work is estimated to be \$4M spread over the next two years.

There is further opportunity to introduce LV network monitoring to enhance network performance. Improved monitoring of the network would provide for detailed analysis of transformer utilisation, station voltage, voltage unbalance and power factor for parts of the low voltage network, enabling NUC to better respond to voltage fluctuations and customer loading issues.

NUC will need to further investigate the requirement to implement such technologies within the low voltage network.

### Public Lighting

NUC aims to achieve the following outcomes through the management of its public lighting infrastructure:

- Provide lighting that enables the safe movement of vehicular and pedestrian traffic.
- Reduce energy costs and NUC’s carbon footprint by utilising Light-Emitting Diode (LED) luminaires, wherever possible.
- Install lighting which complements the streetscape, heritage and amenity of the area.
- Ensure new lighting are designed and installed in accordance with relevant Standards and Guidelines.
- Perform energy audits, which monitor energy costs and quantities of CO2 emissions.

The initial focus of NUC’s lighting upgrades is the replacement or repair of existing street lights with faulty luminaire types.

The amenity and risk posed to motorists and pedestrians will be considered when prioritising lighting projects including:

- traffic and pedestrian volumes (high night time volumes)
- the road classification (sub-arterial, collector, local streets etc.)
- high transport routes.
- high night-time activity areas.

A total of 269 LED streetlights are installed along the Island ring road.

The total power usage for the 269 lights is approximately 22.19kW.

Streetlight Type	Total Installed	Lamp ratings	Power (KW)
LED Units	269	(47*70) (61*120) (74*83) (84*96)	22.19
Bulkhead Units	37	400W	0.00
Stand-alone Units	66	50W	1.75
<b>Totals</b>	<b>372</b>		<b>26.57</b>

The reduction in power usage is attributed to delays in repairing faulty lights. The delays are caused by interruptions in freight and shipments of new lights and fittings to Nauru.

## Water Production and Storage

### *Reverse Osmosis (RO) Sea Water Piping and Pump Capacities*

NUC's Water Production and Storage Network includes:

- Sea water intake schemes with associated water treatment plants 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 290 kL 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 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 2345 kl/day or 2.34 megalitres 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	120	Undergoing relocation to Meneng
5	Veolia Meneng	45	Operational
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 current Meneng (Old) 45 kl/day plant although operational at reduced capacity, will be unable to meet the increasing demand for Menen Hotel, which is currently around 250kl/month.

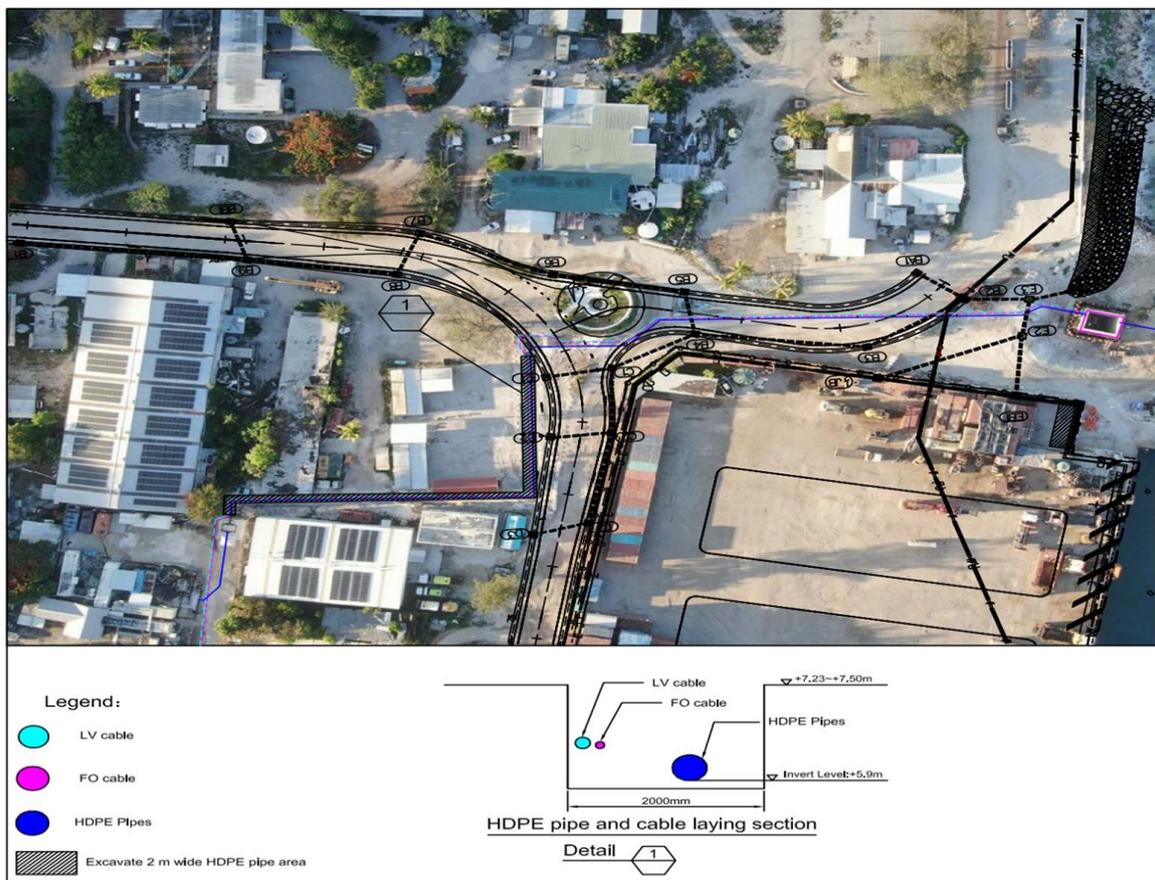
The relocation of the Hitachi 110kL RO has progressed with its disconnection and decommissioning works completed at the Aiwo site and has been delivered to its new site at Meneng.

AusAID funded 2 x 900kL/day reverse osmosis units and a 1.5ML/day remineralisation plant expected to be completed by the end of December 2021 is currently delayed with the revised proposed commissioning of the new plant by end of the 2021-22 financial year. The installation of the shed facility to house the new RO plant is also delayed due to the late arrival of materials and equipment.

The two new RO's to be installed at the Aiwo Power Station site will increase water production capacity to 3.98ML/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 1.2 to 1.3 ML per day. This was mainly due to the continued drought which is forecasted to last well into the second half of the financial year.

The relocation of the sea intake from Bore 1 situated within the Ports project development site has progressed and is nearing completion with the commissioning of the two new Bores 2 & 3 located at the south end of the Ports development. The completed piping connection is depicted in the diagram below.



Sea intake HDPE Layout – Aiwo

The following table sets out NUC water production and delivery key performance results for the period 1 July to 31 December 2021.

Key Performance Indicator	July	August	September	October	November	December
<b>Water Production Unit</b>						
Osmoflow 900 production (Litres)	365,000	7,833,000	10,952,000	1,757,000	669,000	180,800
Avanale 800 production (Litres)	11,490,000	10,302,000	8,770,000	16,612,000	19,406,000	15,139,000
Avanale 480 production (Litres)	7,025,270	5,702,740	6,636,000	11,513,000	11,143,000	8,715,000
Hitachi 110 production (Litres)	0	Unit undergoing relocation				
Veolia 45 production (Meneng) (Litres)	1,199,000	1,261,000	1,184,000	1,236,000	1,470,000	1,217,000
Total Water Production (Litres)	20,079,270	25,098,740	27,542,000	31,118,000	32,688,000	25,251,800
Electricity Usage for Water Production (kWh)	123,641	156,873	168,507	172,983	183,951	170,247
Reverse Osmosis Units Availability (%)	77	78	77	78	80	79
<b>Water Delivery Unit</b>						
Water Delivery Ratio (%)	71	68	75	63	79	82
Water Tank Availability (%)	70	63	67	85	88	89
Hired Tanker delivery Ratio (%)	18	33	46	42	27	22
Total Water Deliveries (Litres)	20,152,000	24,243,000	25,521,505	28,968,505	28,994,500	17,902,069
RPC Demand (Litres) (% of total delivered)	8,180,000 (41%)	8,720,000 (36%)	9,169,505 (36%)	10,614,505 (37%)	19,970,000 (31%)	4,625,500 (23%)
NUC Demand (Litres) (% of total delivered)	11,972,000 (59%)	15,523,000 (64%)	16,352,000 (64%)	18,354,000 (63%)	19,970,000 (69%)	15,858,018 (77%)
Total Water Sales (\$)	217,807	285,811	310,357	322,165	322,575	208,242
Daily Consumption (per Capita) (Litres)	60	72	76	86	86	61
Water Losses (% of production)	1	9	15	13	16	11

Water production over the period to 31 December increased by 36% to October 2021 and subsequently decreasing in demand to July comparable levels by end of December. Total water production for the period reached 161,777,810 litres with an average month production rate of 26,962,968 litres produced over the 6 months.

Total water delivered for the period was 148,363,028 litres, an average increase per month compared to the same period in 2020 of 11%

The continual growth in water demand to November was due to the extended drought period with rainfall falling from 66 millimetres in July to less than 3 millimetres recorded in November. Rainfall during the month of December increased to 44mm resulting in a sharp decline in water demand for the respective month.

## 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. The project has been delayed due to COVID-19 travel restrictions. This is programmed for completion in 2022.

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 megalitres.

Water storage capacity was maintained at approximately 4.2 million litres for security of supply over each month of the reporting period. This equates to 8 days' secure supply of water based on rationing and restrictions of use.

However, water losses increased slightly over the period due to increased leakage from storage tanks and increase in non-revenue water.

Water storage tank relining and continuous maintenance work is currently underway to remedy the leaks and reduce the leakage to acceptable levels.

## 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 86 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	Operating
<b>Hire Vehicles</b>		
Truck 1	8,000	Operating
Truck 2	7,500	Operating
Truck 3	7,500	Operating
Truck 4	4,500	Operating
Truck 5	5,000	Operating
Truck 6	8,000	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 an average 72%. 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 72% 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:

- reprioritised 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 increased over the period by approximately 17% with an average 2,100 deliveries achieved per month. Although, an increase in water deliveries to customers has resulted in an increase in water sales revenue of approximately 16%, delivery costs have increased exponentially due to the actual cost of delivery not able to be fully recovered through the tariffs.

## Achievements against Key Program of Work

The following summarises the key project deliverables for the period 1 July to 31 December 2021.

### Power Generation

Power generation work that was completed this period included:

- The overhaul of G1 12RK270 with major mechanical assemblies completed. Additional works include the radiator, piping and platform works being progressed in this period with 60% of the works completed.
- G4 and G6 mechanical works were completed in this period with electrical works being progressed with the arrivals of components from the UK and India. Materials arriving in Nauru in December.
- The relocation of the NRC workshop and RonPhos crusher to the 11kV Field Feeder is progressing with both customers requiring the installation of transformers and ring main unit switchgear to be installed at the sites.
- Decommissioning of the 3.3kV overhead supply between Command Ridge and RonPhos Crusher.

Ongoing maintenance to all high-speed generators and the medium speed MAN engines was also carried out during this period.

The 12kL Main Fuel Service Tank experienced a leak at its base due to corrosion of the metal weld joints resulting in approximately 3,000 litre of diesel fuel loss. The tank provides fuel supply to the ring main that feeds the generator header tanks. A forced shut down and system blackout was required to mitigate any further damage to the machines with remedial work completed within the 24-hour period. Fuel system redesign and refurbishment is planned to replace the aging tank and structures.

The civil upgrade of the power station floor to accommodate the new 1.1 MW Cummins engine which replaces the failed G2B 1 MW Cummins unit was completed in December.

The Ports 11kV supply progressed with the terminations completed for the Ports feeder at the Aiwo power station. Completion of the connection is dependent on the progress of the Ports development.

Several major projects in power generations have been delayed due to COVID-19 travel restrictions. These projects included our plans to upgrade the SCADA system to reflect all current network augmentations.

The work on major overhaul of G1 – 2.5 MW Ruston and the electrical installation and commissioning of the G4 – 3.0 MW Ruston will be further progressed in the second half of 2021-22 period, dependent on funding availability.

Work has commenced at the 6 MW solar development project with the arrival of 45 contractor personnel from China in December. The project is scheduled for completion end of 2022 with commissioning and full operation by early 2023.

### Distribution

A number of key projects were progressed and completed in the 6 months to December. These included:

- Re-routing RMS and HV/LV mains at Antina
- Buada HV security of supply
- Fresh Centre RMU – RMS back feed alterations
- Boe – Poe/D4/D5 Compact Transformer Upgrade
- Low voltage extension works to supply new customer connections
- Design, grid extension and connection of the Flycamp to NUC network was completed in the period

There remains a number of key projects that are currently delayed due to funding constraints and lead time for supply of equipment. These include:

- Installation of a 5-way high voltage switch (Ring Main Unit) at Od-N-Aiwo awaiting supply of unit from the supplier ABB.
- Overhaul of all Man Engines delayed
- Reduced maintenance and refurbishment of low voltage networks.
- Delays in customer grid extensions
- Purchase of critical plant and equipment for the solar project (funded by NUC).

These include:

- Purchase of 2 Ring Main Units for the grid connection of the solar plant;
- Transformers for the solar project; and
- Relocation of the high-speed generators to the solar site for grid stability and security of supply.

Several low voltage feeder upgrades have been identified for augmentation to improve voltage supply quality and reliability in a number of areas that will need to be prioritised in the next period.

The Airport underground cable experienced a major fault between the ring main unit and the airport transformer station. The fault caused the Ring Main East Feeder to trip. The Airport Transformer was also found to be faulty. The Network teams replaced the transformer and the underground cable.

The ring main east underground cable between the Civic Centre and Boe Poe high voltage switches experienced a fault with two phases shorting to earth. The cable was replaced with a 240mm<sup>2</sup> Triplex XLPE underground cable. Supply was maintained to customers through the ring feedback from the Government Substation during the repair works.

## Water Operations

Works on the construction and fit-out of the new Water Office is nearing completion and is scheduled to be completed in second half of 2021-22 year.

The civil works for the Meneng Reverse Osmosis system was completed.

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 was progressed. The 400NB pipe laying works was completed between the basket filters and pump house. The system has been pressure tested in accordance with specification and standards. The relocation of Bore 1 has progressed feeding into the new sea water pipe.

The AusAID funded 2 x 900kL/day RO plant and 1.5ML/day remineralisation plant expected to be commission by 31 December 2021 has been delayed and is scheduled for completion and commissioning in the second half of the financial year.

C-Tank relining works continued for the period, however the final lining which incorporates a higher-grade epoxy that is able to penetrate into the concrete surface and seal cracks and leaks for a longer period is delayed due to contractors unable to mobilise to Nauru. In the interim NUC is carrying out minor remedial works to contain the leakage to a minimum.

## Contracts and Procurement

An update of NUC's current tenders and contracts for the period 1 July to 31 December 2021 is set out below.

<b>PROJECT/CONTRACT</b>	<b>CONTRACT SUM</b>	<b>WORKS STATUS</b>
Water Office Building (Ames Construction) – Donor Funded	\$285,987.00	Construction of main building underway and in progress
New Excavator Purchase	\$107,000	Contract for the supply awarded
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
Warehouse refurbishment & Office building (Aidon Construction)	\$32,059.60	Refurbishment work progressing.
Security Services Contract	\$663,562	Contract awarded and ongoing performance monitored July to December 2021.
Hire Tanker Contracts	Fixed Rates Apply	Fixed fee contracts, multiple suppliers.

## Financial Performance

The core revenue streams for NUC are energy and water sales. Water sales is further divided into volume and delivery sales.

NUC's income from electricity and water sales including other income items was \$12,734,219 for the 6-month period.

This comprised of electricity income of \$10,949,547 and water income of \$1,749,287.

Actual electricity income compared favorably with budget estimates for the 6-month period with income 13% higher than forecast. Actual water income varied by 27% when compared to budget estimates due to reduction in demand and sales over the 6-month period.

NUC's total operating expenses for the period were within 2% of the budgeted forecast for the 6-month period.

NUC's financial status for Year-to-Date to December 2021 shows earnings before tax of \$267,358.00. A positive financial trend for NUC which demonstrated that NUC was just able to cover its operating expenses including depreciation to date.

Water demand and sales fluctuated with increased sales over the three months period from September to November 2021. This was due to the drought spell and low rainfall.

The main core expenses for NUC over the 6-month period are fuel, labor costs and repairs and maintenance expenditure.

Total operational expenses amounted to \$10,868,077 made up of \$5,480,030 for diesel fuel and oil expenses; \$1,891,912 staffing expenses and \$1,731,495 for repairs and maintenance expenses in both the energy and water services.

The profit and loss statement for the period ending 31 December 2021 is provided in the following table.

Description	Jul	Aug	Sep	Oct	Nov	Dec	YTD
<b>Income</b>							
Electricity income	1,821,041	\$ 1,747,406	\$ 1,881,646	\$ 1,849,638	\$ 1,898,483	\$ 1,751,333	\$ 10,949,547
Water income	217,807	\$ 285,811	\$ 310,357	\$ 322,165	\$ 322,575	\$ 290,571	\$ 1,749,287
Other revenue	-	\$ -	\$ 23	\$ 35,362	\$ -	\$ -	\$ 35,386
<b>Total Income</b>	<b>\$ 2,038,848</b>	<b>\$ 2,033,217</b>	<b>\$ 2,192,026</b>	<b>\$ 2,207,165</b>	<b>\$ 2,221,058</b>	<b>\$ 2,041,904</b>	<b>\$ 12,734,219</b>
<b>Expenses</b>							
<b>Electricity:</b>							
Staffing (Inc. Expat Housing)	\$ 158,726	\$ 174,137	\$ 149,920	\$ 233,721	\$ 250,813	\$ 173,363	\$ 1,140,680
Fuel & Oil	\$ 813,083	\$ 921,567	\$ 930,140	\$ 910,172	\$ 884,228	\$ 1,020,840	\$ 5,480,030
Repair & Maintenance	\$ 56,348	\$ 108,598	\$ 67,918	\$ 254,537	\$ 225,631	\$ 478,421	\$ 1,191,452
Other	\$ 1,596	\$ 40	\$ 5,686	\$ 292	\$ 930	\$ 100	\$ 8,643
<b>Total Electricity</b>	<b>\$ 1,029,754</b>	<b>\$ 1,204,341</b>	<b>\$ 1,153,664</b>	<b>\$ 1,398,721</b>	<b>\$ 1,361,602</b>	<b>\$ 1,672,724</b>	<b>\$ 7,820,805</b>
<b>Water:</b>							
Staffing (Inc. Expat Housing)	\$ 41,596	\$ 44,760	\$ 41,459	\$ 66,163	\$ 83,749	\$ 60,297	\$ 338,023
Repair & Maintenance	\$ 43,147	\$ 43,917	\$ 110,158	\$ 133,141	\$ 128,737	\$ 80,943	\$ 540,043
Rental vehicle							\$ -
Other	\$ 6,592	\$ 7,992	\$ 10,041	\$ 5,774	\$ 8,105	\$ 7,298	\$ 45,803
<b>Total Water</b>	<b>\$ 91,335</b>	<b>\$ 96,669</b>	<b>\$ 161,658</b>	<b>\$ 205,078</b>	<b>\$ 220,591</b>	<b>\$ 148,538</b>	<b>\$ 923,869</b>
<b>Corporate:</b>							
Consultants							\$ -
Staffing (Inc. Expat Housing)	\$ 49,663	\$ 70,058	\$ 55,174	\$ 95,241	\$ 62,096	\$ 80,977	\$ 413,209
Training	\$ 12,525	\$ 2,400	\$ 2,747	\$ 3,140	\$ 2,400	\$ 3,745	\$ 26,958
Repair & Maintenance	\$ 3,420	\$ 2,754	\$ 3,320	\$ 10,858	\$ 8,072	\$ 3,094	\$ 31,518
Rental vehicle							\$ -
Freight & Duty	\$ 18,443	\$ 8,719	\$ 13,543	\$ 51,401	\$ 28,498	\$ 22,501	\$ 143,105
Security expense	\$ 58,435	\$ 58,838	\$ 87,324	\$ 58,301	\$ 58,301	\$ 58,301	\$ 379,500
short term leases	\$ 6,169	\$ 6,169	\$ 6,169	\$ 6,169	\$ 6,169	\$ 6,169	\$ 37,012
Telephone/Fax/Internet	\$ 22,060	\$ 27,452	\$ 24,768	\$ 25,159	\$ 23,121	\$ 33,718	\$ 156,279
Doubtful debt reversal							\$ -
Interest expense-IFRS 16	\$ 93,866	\$ 93,866	\$ 93,866	\$ 93,866	\$ 93,866	\$ 93,866	\$ 563,198
Other	\$ 14,175	\$ 59,117	\$ 32,732	\$ 44,407	\$ 42,660	\$ 179,533	\$ 372,623
<b>Total Corporate</b>	<b>\$ 278,757</b>	<b>\$ 329,373</b>	<b>\$ 319,644</b>	<b>\$ 388,541</b>	<b>\$ 325,184</b>	<b>\$ 481,902</b>	<b>\$ 2,123,402</b>
<b>Total Operational Expenses</b>	<b>\$ 1,399,846</b>	<b>\$ 1,630,384</b>	<b>\$ 1,634,965</b>	<b>\$ 1,992,340</b>	<b>\$ 1,907,377</b>	<b>\$ 2,303,164</b>	<b>\$ 10,868,077</b>
<b>EBITDA</b>	<b>\$ 639,002</b>	<b>\$ 402,834</b>	<b>\$ 557,061</b>	<b>\$ 214,825</b>	<b>\$ 313,681</b>	<b>(261,260)</b>	<b>\$ 1,866,142</b>
<b>Depreciation</b>							
Electricity	\$ 169,522	\$ 169,522	\$ 169,522	\$ 169,522	\$ 169,522	\$ 169,522	\$ 1,017,131
Water	\$ 7,280	\$ 14,618	\$ 14,618	\$ 14,618	\$ 14,618	\$ 14,618	\$ 80,370
Corporate	\$ 13,246	\$ 25,037	\$ 19,142	\$ 19,142	\$ 19,142	\$ 19,142	\$ 114,851
Depreciation expense-ROUA	\$ 64,406	\$ 64,406	\$ 64,406	\$ 64,406	\$ 64,406	\$ 64,406	\$ 386,433
<b>Total Depreciation</b>	<b>\$ 254,453</b>	<b>\$ 273,583</b>	<b>\$ 267,687</b>	<b>\$ 267,687</b>	<b>\$ 267,687</b>	<b>\$ 267,687</b>	<b>\$ 1,598,784</b>
<b>Total Expenses</b>	<b>\$ 1,654,300</b>	<b>\$ 1,903,966</b>	<b>\$ 1,902,652</b>	<b>\$ 2,260,027</b>	<b>\$ 2,175,064</b>	<b>\$ 2,570,851</b>	<b>\$ 12,466,861</b>
<b>Add Other income</b>							
	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Less Other Expenses</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Earnings Before Tax (EBT)</b>	<b>\$ 384,549</b>	<b>\$ 129,251</b>	<b>\$ 289,374</b>	<b>\$ (52,862)</b>	<b>\$ 45,993</b>	<b>\$ (528,947)</b>	<b>\$ 267,358</b>

	Jul	Aug	Sep	Oct	Nov	Dec	YTD
Cash Sales Income	\$ 805,310	\$ 747,116	\$ 782,929	\$ 778,630	\$ 811,018	\$ 808,814	\$ 4,733,818
Credit Sales Income	\$ 1,233,538	\$ 1,286,101	\$ 1,409,097	\$ 1,428,535	\$ 1,410,039	\$ 1,233,090	\$ 8,000,401
	<b>2,038,848</b>	<b>2,033,217</b>	<b>2,192,026</b>	<b>2,207,165</b>	<b>2,221,058</b>	<b>2,041,904</b>	<b>12,734,219</b>

## *Community Service Obligation*

As provided for under section 25 of the *Public Enterprise Act 2019*, the Nauru Utilities Corporation may in negotiation with the Responsible Minister for Utilities undertake community service obligations subject to the approval of Cabinet.

In accordance with section 25(2) NUC have in good faith negotiated with a view to agreeing with the arrangements under which NUC can give effect to the community service obligation proposal without acting inconsistently with its primary objective under the Public Enterprise Act.

For completeness, NUC's primary objective, as outlined in section 22 of the *Public Enterprise Act 2019*, is to be a successful business and the provision also establishes two measures for the NUC to demonstrate its achievement of the objective by:

- being at least as profitable and efficient as comparable businesses in the private sector; and
- generating, for each financial year, a net operating profit after tax that is not less than its weighted average cost of capital prescribed as a percentage.

In relation to the community service obligations (CSO), Division 2 section 26 of the *Public Enterprise Act 2019* also applies.

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 under the Act 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.

In the 2021-22 Budget, the Government stated that it would continue with the CSO program as related to NUC:

*“Nauru Utilities Corporation (NUC) to provide affordable electricity through a pre-pay lifeline tariff for up to 200 kWh of power. The lifeline tariff covers the minimum monthly electricity requirement for household. The revenue for the CSO will underpin reductions in residential tariff rates. NUC will also develop options for household energy efficiency measures.”*

Further, the 2021-22 Budget Paper presented the following conclusions:

*“The CSO for the pre-pay lifeline residential tariff will increase revenue certainty, enable NUC to reduce its residential tariff lines as follows:*

- residential lifeline pre-pay rate of the tariff will be reduced from 25c to 22c*
- residential pre-pay tariff will be reduced from 50c per kWh to 47c*
- residential post-pay tariff will be reduced from 50c to 48c*

*All other tariffs will remain the same.”*

In relation to achieving its objectives, NUC key assumptions in its budget submission stated that tariffs and rates in all categories would remain unchanged and that the key support policy of Government i.e., Community Service Obligation would continue to enable the tariffs to remain unchanged.

An important further key assumption regarding the lifeline tariff threshold for residential electricity customer category was that it would remain at 200 kWh per month.

This threshold is applied to all residential customers and not merely pre-pay customers as indicated in the Budget Statement above. Further, all domestic customers including grid connected roof-top solar customers continue to benefit from the life-line tariff for the 200-kWh threshold.

In its Budget submission for the 2021-22 financial year, NUC further stated that the provision to provide affordable electricity to all residential lifeline customers would incur a projected increase of 10% in the 2021-22 budget forecast.

The projected forecast that the CSO requirement would be \$1,550,849.77 compared to \$1,388,213.00 in the previous year.

However, the approved budget for the CSO for the 2021-22 financial year has been capped at \$1,388,213 resulting in a projected shortfall of \$162,636.77. Therefore, the CSO does not cover the marginal cost of service provided by NUC.

NUC completed its assessment on actual kWh used for the first quarter, i.e., from July 2021 to September 2021, and based on our Suprima system extraction (prepaid) and metering count (post-paid), total kWh for the 1st quarter stands at \$423,074.90 as opposed to our initial estimate of \$387,712.44, with actuals being 9% more.

This is the result of significant increase in demand for residential customer connections and new housing developments across Nauru.

NUC has been presented with a revised Community Service Obligation and Subsidy proposal for which mutual agreement is being sought between the Government and NUC. However, to date no agreement has been finalised.

The proposal sets out the following requirements on NUC:

- to further reduce the CSO monthly allowance of up to 200kWh from an electricity rate of \$0.25 per kWh to the new rate of \$0.20 per kWh;
- the lifeline annual revenue (20 cents for 200kWh) capped at \$1,388,213;
- maintain the current prepaid and post-paid tariff of \$0.47 and \$0.48 respectively for electricity usage above the 200kWh threshold; and
- the 200kWh threshold is made available to all residential households.

As the proposed CSO will not be sufficient to cover the projected shortfall in revenue, NUC assessed the following options:

Option 1: The Community Service Obligation payment is adjusted/increased to cover the projected CSO for the 2021-22 financial year as initially proposed by NUC.

Option 2: The residential lifeline tariff currently paid by residential customers of \$0.22c for the first 200kWh be increased to reflect the reduced contribution to NUC from the CSO.

Option 3: Decrease the residential lifeline tariff threshold from 200kWh to a level that reflects the reduced contribution to NUC from the CSO.

Option 4: Increase the commercial and government customer tariffs to enable a further cross-subsidization of the residential customer tariff while maintaining the current residential tariff and lifeline threshold of 200kWh.

NUC considers option 1 to be the most appropriate solution however, based on the Government's proposal to enable its policy objectives to be met, NUC was advised that Option 4 would be the preferred alternative.

Therefore, in accordance with section 26 of the Act, NUC has sought compensation sufficient to allow NUC's position to be restored if the Government wishes us to undertake activities or assume obligations that in our view will:

- result in a reduction of NUC's profit or net worth, or
- modify our assets in ways that reduce ongoing security and reliability.

However, as at 31 December NUC has not been able to implement the preferred option and has not been issued a Community Service Obligation payment to cover the policy objectives established by government.

This has resulted in NUC being unable to comply with the obligations set out in the *Public Enterprise Act 2019*. NUC has also identified a number of key risks should NUC's financial position not be compensated adequately, these include:

- receipt of insufficient CSO provision will negatively impact on NUC current budget, resulting in curtailed spending on critical operating and maintenance activities;

- As no agreement has been reached between the GoN and NUC on the provision of the CSO for 2021-22, the lack of CSO provision will adversely affect the organisational financial risk profile of NUC;
- This impact will be significantly affected where NUC is unable to financially recover the shortfall in the CSO from its customers. This will result in a negative commercial outcome for NUC;
- A reduction in CSO will require an increase in residential tariffs to normal levels or a reduction in the lifeline threshold of 200 kWh per month.
- This will impact negatively both from a government policy perspective and NUC public image;
- A negative impact on stakeholder relations is envisaged due to variations in lifeline thresholds and tariff adjustments;
- With the curtailment of spending on critical assets, NUC security and reliability of supply will be at risk, resulting in increased interruptions to supply; and
- Increasing fuel costs will place additional constraints on NUC's financial sustainability.

As detailed in the previous sections, there remains a number of key projects that are at risk due to funding constraints. These include the:

- installation of a 5-way high voltage switch (Ring Main Unit) at Od-N-Aiwo awaiting supply of unit from the supplier ABB.
- overhaul of all Man Engines delayed.
- reduction in maintenance and refurbishment of low voltage networks.
- delay in customer grid extensions.
- purchase of critical plant and equipment for the solar project (funded by NUC) that include the:
  - purchase of 2 Ring Main Units for the grid connection of the solar plant;
  - supply of transformers for the solar project; and
  - relocation of the high-speed generators to the solar site for grid stability and security of supply.

NUC has reviewed the tariff and prices charged to customers and has assessed the risks to its operations as a result of non – payment of the CSO. It has considered both actual and forecasted demand and has therefore sought to resolve and mitigate the risks to enable sufficient revenue to allow NUC's position to be restored as a result of reduction in profits and reduction in ongoing security and reliability of supply (due to increased fuel charges, and available operating and maintenance expenditure).

In the event that NUC is unable to recover sufficient revenue to allow it to restore its financial position and place at risk the security and reliability of supply, NUC may subject to any price order made under section 6(1) of the *Prices Regulation Act 2008*, determine the fees it will charge for the supply of electricity to customers as required under section 13 of the *Nauru Utilities Corporation Act 2011*.

## *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.

Due to the absence of clear regulations and/or rules with respect to the implementation and application of the Feed-in Tariff – Solar Scheme the buy-back arrangement continues to be inconsistently applied. The lack of adequate policy has resulted in the Feed-in-Tariff scheme being extended beyond the residential customer class, has included larger rooftop solar PV installations (above 10 kW) on commercial and government buildings as well as donor funded installations.

### Customer Rooftop Solar Installations

Currently there is 712 kW in customer-owned solar PV existing in Nauru as of December 2021. This comprises:

- 96 kW installed capacity of rooftop solar PV sized at 10 kW or less. These are primarily residential rooftop solar.
- 60 kW installed capacity of rooftop solar PV sized at 30 kW;
- 97 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.

Solar PV of 30 kW and above are primarily installed by commercial or government customers.

There are a number of customers who have non-grid connected rooftop solar PV with a total capacity of 150.3 kW. These customers supplement their power usage by importing from the grid as well as self-supply and do not export energy to the NUC grid.

There are also a number of new roof top solar grid connected installations being considered which, when implemented, will add a further 1.45 MW of solar generation capacity in Nauru. These proposals include:

- Sport Complex 70 kW Solar Installation and Battery Storage<sup>5</sup>
- Hospital Facility 200 kW Solar Installation
- Prison Complex 300 kW Solar Installation
- Civic Centre Complex 500 kW Solar Installation
- Menen Hotel 130 kW Solar Installation<sup>6</sup>
- Meneng RO Plant 100 kW Installation

In the case of small and large solar PV installations (not ground mounted) consideration needs to be given to the cost of security and reliability of grid that should be shared by solar PV generators exporting to the grid.

#### [NUC Feed-in Tariff Policy](#)

NUC has developed a policy paper that establishes the guidelines and rules to be applied to address the inconsistencies with the Feed-in Tariff Solar Scheme to ensure the continued uptake of renewable energy particularly rooftop solar remains economically and financially sustainable.

The policy sets out the:

- 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 for the purposes of the feed-in tariff;
- required standards and rules
- payback period and of a customer's installation and expiry date for the scheme; and
- required notification period for NUC to inform its customers of any changes to the solar Feed-in Tariff.

A stakeholder consultation workshop is planned in the next period to seek feedback on the policy prior to it being implemented in 2022.

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<sup>5</sup> Awaiting feasibility study to determine sizing of plant and other parameters

<sup>6</sup> Funding approved with design completed with installation scheduled in 2022

## Appendix 1: Annual Work Plan 2021-2022

The proposed program of work for 2021-22 and beyond is set out below and provides a summary of the scope of works completed, pending or ongoing during this period; covering both operational improvement work and new projects.

- The estimated budget allocated to each project scope is slightly uncertain and would require adjustments while approaching implementation of works.
- The implementation of minor projects funded by NUC shall be dependent upon available revenue, cash-flow and availability of resources.
- Operational scopes contributing to improvements such that the results would provide additional security and increase or supplement revenue to NUC shall be prioritised.
- Major projects listed would require donor collaboration which some are already in progress with feasibilities undertaken and proposals submitted.

#	Projects	Scope of Work	Target Completion Date	Budget Estimate
<b>A</b>	<b>Power Distribution</b>			
<b>1</b>	Re-route RMS HV/LV at Antina	Current HVABC and bare Cu LV is imposing a safety risk to customers, especially to a proposed new building. It is decided the cable be re-routed via underground between the poles at Antina and furthest to the bush. Existing OH to also lay in the same cable trench.	Completed	\$70000.00
<b>2</b>	Buada HV Security of Supply	Provide additional security of supply via underground & RMU to Buada Customers from Field Feeder terminated to load side of ABS 354	Completed	\$30000.00
<b>3</b>	Fresh Centre RMU-RMS back feed alterations	Decommissioned U/G to Meneng Hotel and shift cable marked RMS back feed to CB marked Meneng Hotel at Fresh Centre RMU and commission	Pending	\$1700.00
<b>4</b>	Boe-Poe/D4/D5 Compact Transformer upgrading	Replace existing Transformer and LV circuit breakers with compact type switchgears	Pending	\$45000.00
<b>5</b>	Dedicated supply to Digicel repeater at Meneng	Re-route existing supply as per new design-connect to Meneng RO Transformer via Overhead 3 phase supply.	Completed	\$27000.00
<b>6</b>	Buada Hill LV extension	Upgrade existing single phase to 3-phase ready to supply proposed new customers and street lights	Completed	\$19200.00

7	Buada Low Voltage	Extend existing LVABC (8 spans) to supply customers experiencing low voltage at north ends of Buada	Completed	\$25000.00
8	Oden Aiwo Substation	Relocate the substation as per new design due to land issues. Extend LV supply to Aiwo customers, Aiwo Town Ace and Street Lights	Pending	\$15000.00
9	Field Feeder HV Extension	Extend HV to supply RonPhos Crusher, weighbridge and NRC workshop substation and decommissioned existing 3.3KV grid	Pending	\$45000.00
10	Solar Interconnector Feeder	Cable Terminations and Commissioning	Pending	\$10000.00
11	Anabar LV Extension	6 spans LV extension to new customers at Anabar	Completed	\$7700.00
<b>B</b>	<b>Power Distribution-projects</b>			
12	LV Refurbishment works	Upgrading of LV Network. Replace all LV line hardware and cables (existing Cu to WASP)	On-going (dependent on funding)	\$250000.00
13	Buada low voltage ring main	Upgrade existing underground supply to 240mm <sup>2</sup> XLPE or Triplex	Pending	\$300000.00
14	Replacement of ABS- Network High Voltage switches	Replace all ABS with ground mounted HV RMU with SCADA integration capabilities	Pending	\$289600.00
15	HV Grid Extension to RPC 2	Extend existing HV network to supply RPC 2	Pending	\$400000.00
16	Installation of HV Switches at RonPhos Kiln and shoreline substation	Replace existing old switches gears with HV RMUS and HV Metering	Pending	\$30000.00
17	RonPhos Kiln substation transformer Upgrading	Service or replace all 4 x 3.3KV/550V transformer at RonPhos Kiln for future increase in demand	Pending	\$80000.00
18	Dedicated Feeder to RonPhos Kiln	Existing 3.3KV field feeder to be upgraded as RonPhos Drier Feeder	Pending	\$20000.00
19	Ports-Location-RON Ring main	11KV Ports feeder via 240mm <sup>2</sup> Triplex U/G to Ports substation with option for future extension to Location compound and RON. Ring main (refer design)	Pending	\$135000.00 (Funds received)
20	Location compound LV upgrading L1-L6	Refurbish L1 to L6 substations	Pending	\$200000.00
<b>C</b>	<b>Power Generation</b>			
1	G2A & B Cummins Engines	Top-overhaul	Pending	\$250000.00
2	G5 Cummins Engine	Top-overhaul and reroute LV cable	Completed	\$125000.00

3	Ruston G8 8RK3C	Decommissioned	Completed	\$7000.00
4	G7B Cummins Engine	Top-overhaul and relocate to replace G8 Ruston inside Power Station	Completed	\$150000.00
5	3.3KV bus section CB service	Carryout existing SF6 CB service and tests	Pending	\$45000.00
6	HV cable tunnel electrical & civil upgrading	Remove all decommissioned cables, switches and accessories Installation of Lights Assess and repair civil components, floors and structures	Completed	\$30000.00
7	Civil upgrading Power Station floor	Clean & Paint PS floor, demarcation of safety zones	Completed	\$15000.00
8	Battery room ventilation	Install suction and exhaust fans	Completed	\$20000.00
9	3.3KV ventilation	Install ceiling fans and leak proof exhaust fans	Completed	\$20000.00
D	<b>P/Generation Major Projects</b>			
10	11KV Bus extension	Bust extension to accommodate <ul style="list-style-type: none"> <li>• Ports Feeder</li> <li>• Field Feeder</li> <li>• Solar Interconnector Feeder</li> </ul>	On-going	\$80000.00
11	G1-2.5MW Ruston	Major overhaul	On-going	\$300000.00
12	G4-3.0MW Ruston	Electrical installation and commissioning	On-going	\$50000.00
13	G6-2.0MW Ruston	Electrical installation and commissioning	On-going	\$50000.00
14	SCADA upgrading	Upgrade to reflect all current developments	On-going	\$30000.00
15	Injector Room	Construct New Injector room	On-going	\$35000.00
16	Hydraulics Room	Construct New hydraulics pump room	On-going	\$35000.00
17	PS Fuel System upgrading	New Service tanks, purifiers and ring main	On-going	\$200000.00
18	Relocation of High Speeds to Solar site	Relocate HS units to solar site to provide stability during cloud-covers.	Pending	Donor
19	Oil Purifiers-G1, 4 & 6	Install Oil purifiers to all Ruston Engines to enable increase in lubricating systems life	Pending	\$150000.00
E	<b>Water Operations</b>			
1	Water Dispatch revised model	Implementation of Customer Tank ID's, integrated into Navision software	On-going	\$40000.00
2	Water Tanks Survey	Carryout survey of all customer tanks and prepare database	On-going (87% completed)	\$4000.00
3	C Storage tanks relining	Carryout epoxy lining of C tanks	On-going	\$212000.00
4	B13 site dispatch pump	Install and commission a water dispatch pump at B13 site	Completed	\$11000.00
5	C5 standpipe	Relocate standpipe to allow CHEC carryout road works (refer design)	Pending	\$8000.00

6	Meneng alternative site 3.2ML concrete tank refurbishment.	3.2ML concrete tank is vulnerable and imposes a risk to fail if refurbishment works are delayed. The risk assessment report identified the tank reinforcements are corroded and exposed, cracks visible near lower portions of the walls. Tank SFL is reduced to 40%.	Pending	\$150000.00
7	4ML B13 storage tank	Tank assessment carried out in 2017 stipulates the steel thickness have greatly reduced and SFL be reduced to 85%. It is recommended the tank be replaced within 5-7 years from the date of assessment	Pending	\$700000.00
F	<b>Water Operations Projects</b>			
8	3ML & 300KL Water storage and treatment tank	Install and Commission tanks at B13 Dispatch site-Pioneer Tanks. 3ML will replace the decommissioned 3ML B10 steel tank	Pending	\$500000.00
9	300KL Treatment Tank-Meneng Water Production Site	Install & Commission tank at Meneng WP site (Both 7 & 8 is executed by Contractor; Pioneer Tanks)	Pending	\$250000.00
10	Water Office	Complete Construction works and finishing. NUC arranging materials, funded by AusAID	On-going	\$135000.00
11	Meneng Water production site	Establish alternative water production site as security of supply-install new 480KL Ro unit, relocate Hitachi from the Aiwo Water production site. Install and commission sea water well.	On-going	\$50000.00
12	RON-Location compound Underground reticulation	Underground fresh water supply to RON Hospital from C Storage tanks, tee-off to Location compound Refer report from BTW-New Zealand	Pending	Donor
13	Aiwo underground reticulation	Underground fresh water supply to Customers at Aiwo from B13 and proposed B10 Storage Tanks via gravity feed-prepaid arrangement	Pending	Donor
14	Meneng underground reticulation	Underground fresh water supply to Meneng customers from alternative productions site via gravity feed	Pending	Donor
G	<b>Regulatory &amp; Metering (PPM)</b>			
1	Installation Review	Safety inspection and correction of all customer installations.	Complete	\$50000.00
2	HV metering	Install and commissioned HV metering to current unmetered	On-going	\$15000.00

		customers, RonPhos drier, RonPhos shoreline and Cantilever		
3	Remote readings of post-paid customers	Feasibility study and discussions with relevant suppliers, option to integrate to Suprima	Pending	\$30000.00
H	<b>Renewable Energy</b>			
1	6MW Solar Installation & Commissioning	Contract awarded to CHEC/HNAC/RISEN JV. Commissioning by end of 2022	On-going	\$22000000.00
2	Grid connected Roof Top Solar	Commissioning of grid connected RT solar at residential customer premises, via by-directional meters and Tariff buy-back policy	Ongoing - NUC	TBD
3	Ports 800KW RT Solar	Coupled with Ports development project-grid connected Roof Top agreement	Cancelled	Cancelled
4	New Prison 300KW RT Solar	Grid connected RT agreement	Pending	TBD
5	Pump Hydro storage	Feasibility-NZMFAT	Feasibility - Pending	TBD
7	Floating solar-Wind Hybrid	Feasibility-arrange possible donor	Donor -ADB Feasibility Pending	\$2000000.00
	<b>Other works</b>			
1	Refurbishment of Customer Service Office	Carryout full internal refurbishment of the office	Completed	\$40000.00
2	Refurbishment of Fleet workshop	Refurbish the room and convert to training room	Completed	\$80000.00
3	Lavatory for staff	Old distribution office shall be converted to lavatory	Contract Terminated, Pending	\$45000.00
4	Welding & Fabrication Workshop	Proper Welding and Fabrication workshop coupled in the Power Station	Completed	\$25000.00
J	<b>Capacity Building/Training of Staff</b>			
1	Customer Service	All NUC Staff to undergo refresher training	Completed	\$5000.00
2	First Aid	Refresher Training	Completed	\$5000.00
3	Fire Fighting	Refresher Training	Completed	\$5000.00
4	Counselling & Mentoring Staff	Refresher Training	Completed	\$5000.00

## Appendix 2: Current Electricity and Water Charges 2021-22

Electricity & Water Fees and Charges			
	Note	Tariff/ Rate	Unit
<b>Electricity</b>			
Residential Lifeline	A	\$ 0.22	kWh
Residential Prepaid	A	\$ 0.47	kWh
Residential Postpaid	A	\$ 0.48	kWh
Commercial		\$ 0.70	kWh
Industrial		\$ 0.70	kWh
Government		\$ 0.70	kWh
Feed In Tariff	B	\$ 0.20	kWh
Reconnection Fee		\$ 15.00	per event
Meter Tampering/ By Pass Fine Residential		\$ 1,000.00	per meter
Meter Tampering/ By Pass Fine Commercial		\$ 10,000.00	per meter
Reconnection after Tampering		\$ 100.00	per meter
Single Phase meter		\$ 120.00	per meter
Three Phasse 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
<b>Water</b>			
Residential		\$ 0.0084	Litre
Commercial/ Industrial		\$ 0.0118	Litre
Government		\$ 0.01553	Litre
Residential Delivery < 5,000 L		\$ 5.00	per truck
Residential Delivery > 5,000 L		\$ 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
<b>Corporate</b>			
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
<b>Note A</b>			
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.			
<b>Note B</b>			
Feed-In tariff applies to excess energy supplied to the grid by customers who have installed grid connected roof top solar panels.			

## Appendix 3: Summary Operational Performance Results

Sector	Description	Unit/Measure
<b>Electricity</b>		
<b>Renewable Energy Capacity Factors</b>	Total grid connected solar generated (% of total Generation)	10%
	Total government solar energy generated (%)	15%
	Total solar energy generated exported to grid (%)	79%
	Total private sector solar energy generated (%)	18%
	Total private sector energy generated exported to grid (%)	10%
<b>Energy Sales and Production</b>	Total diesel energy produced (kWh)	20,879,316
	Total renewable energy produced (kWh)	2,237,839
	Total renewable energy exported to grid (kWh)	1,786,214
	Total auxiliary power consumed power station supply (kWh)	295,316
	Total sales (kWh)	19,082,234
	Total revenue from energy sales (\$)	10,949,547
	Total losses (kWh)	1,797,082
	Losses Total losses / (total diesel energy and total renewable energy exported to the grid) (%)	11%
<b>Water Production and Delivery</b>	Total water produced (volume) (Litres)	161,777,810
	Availability of reverse osmoses units (%)	78%
	Total electricity used for water production (%)	4.6%
	Production efficiencies (Litres/kWh)	165
	SWIRO Availability (% time available for operations)	78%
	Water Tanker Availability (% time available for operations)	77%
	Water Delivery Ratio (% of deliveries completed within 2 days of order)	73%
<b>Water sales and deliveries</b>	Water volume sales (Litres)	148,363,028
	Water tank trip sales (number of deliveries)	12,733
	Water losses (%) Losses = (water loss) / (water production storage)	11%
<b>Financial Performance</b>		
<b>Electricity</b>	Weighted Average Per Unit Cost (Total Power Exported) / (Energy Sales + Production)	0.5692
	Weighted Average Per Unit Revenue (Sales) / (Energy Sales + Production)	0.5737
<b>Water</b>	Weighted Average Volume Unit Cost (Total Water Expenses) / (Water Sales + Deliveries)	0.01162
	Electricity Cost for Water Production and Delivery 0.7 / (Water Production + Storage)	0.00432
	Total Unit Cost of Water Production and Delivery (Weighted average volume unit cost) / (Electricity cost for water production and delivery)	0.01594
	Weighted Average Water Revenue / Litre (Total Water Income) / Water Sales + Delivery)	0.01583
	Unit Cost of Water per Litre (\$/L)	0.01951
<b>Network Performance Indicators</b>	System Average Interruption Duration Index (Planned and/or Unplanned) SAIDI Customer minutes	816
	System Average Interruption Frequency Index (Planned and/or Unplanned) SAIFI Interruption frequency	12.5
<b>Human Resources</b>	Labour Work Hours/Labour Paid Hours (Overtime ratio)	1.41
	Number of employees	166
	Productivity (Overtime rate) (%)	29%
<b>ICT</b>	Complaints, outages, internal network faults, system faults (Open Tickets)	0
	Closed Tickets	12
	Resolved Tickets	598
	Total SMS Power Top-up	137,568
<b>Procurement</b>	Orders placed, delivered, outstanding and delivery duration. (Number of orders, deliveries, outstanding. Delivery duration in days)	TBD

## Maintenance Compliance Results

The maintenance of key assets is tracked by the following indicators.

The maintenance of our assets is a key factor in ensuring reliability and security of electricity and water supply.

Indicator (KPI)	2019	2020	2021	Actual to date	2022	KPI Description
Generator Maintenance Compliance	97	94	95	<b>95</b>	95	(%) Compliance to maintenance schedule based on running hours
Generator Availability	94	92	94	<b>87</b>	94	(%) time available for operations
SWRO Availability	96	90	95	<b>78</b>	95	(%) time available for operations
Water Tanker Availability	78	77	80	<b>77</b>	80	(%) time available for operations
Water Delivery Ratio	81	83	85	<b>73</b>	85	(%) delivered within 2 days of order

Indicator (KPI)	2019	2020	2021	Actual to date	2022	KPI Description
Specific Fuel Consumption (Diesel)	3.87	3.9	3.9	<b>4.01</b>	3.9	kWh per litre diesel fuel
Specific Lubricating Oil Consumption	856	1097	1095	<b>1152</b>	1095	kWh per litre lubricating oil
Electricity Losses	12	18	15	<b>11</b>	15	(%) of energy delivered to the grid
Power Station Auxiliary Energy Usage	1.03	1.18	1.05	<b>1.43</b>	1.05	(%) energy generated by diesel engines
NON-Revenue Energy	5	2	2	<b>1.3</b>	2	(%) energy provided not earning revenue
Reverse Osmosis Plant Efficiency	199	194	195	<b>165</b>	195	Litres per kWh
Water Loss	10	25	12	<b>11</b>	12	(%) water produced
Non-Revenue Water	6	3	5	<b>9</b>	5	(%) water provided that is not earning revenue. (Excludes losses)

## Electricity Network Performance Indicators

The following sets out our key performance indicators for the electricity network measured by how often a customer can expect to experience an outage i.e., System Average Interruption Frequency Index (SAIFI) and the measure of average outage duration per customer, System Average Interruption Duration Index (SAIDI).

Year	2019	2020	2021	Actual to date	2022
SAIDI (Planned and Unplanned)	2235	2410	2000	<b>816</b>	2000
SAIFI (Planned and Unplanned)	34	30	20	<b>12.5</b>	20

The following sets out target measures for the various key performance indicators described above.

Target	Key Performance Indicators 2021-22
<2000	System Average Interruption Duration Index
<20	System Average Interruption Frequency Index
>5%	Operating surplus electricity
>5%	Operating surplus water
>2.5%	Operating surplus Corporate
>10%	Revenue increase
<100 days	Debtor days
<30%	Non-revenue energy
>85%	Generator availability
>90%	Generator maintenance compliance
>3.6	Specific fuel consumption
<500	Specific lubricating oil consumption
<25%	Electricity losses
<2%	Power station auxiliary energy usage
<10%	Water losses
>85%	Water Delivered within 2 days of order
>80%	Water tanker availability
>85%	Reverse osmosis plant availability
<100	Labour work hours productivity
<130	Labour paid hours productivity
>95%	On time attendance

## Appendix 4: Financial Projections 2021-2022

### Summary Budget Forecast 2021-22 Financial Year

	BUDGET FY21/22
Electricity Income	19,345,418.86
Water Income	4,783,430.36
Other Income	100,000.00
<b>Total Revenue</b>	<b>24,228,849.21</b>
Employment Expenses	4,974,683.88
Financial Expenses	1,188,086.38
Fuel & Oil Expenses	10,695,816.12
Fuel for Vehicles	262,622.76
ICT Expenses	394,917.82
Repairs & Maintenance Expenses	1,675,547.12
Board Expense	45,024.00
General & Administrative Exp	2,006,661.08
<b>Total Expenses</b>	<b>21,243,359.16</b>
EBITDA	2,985,490.05
Depreciation	2,706,028.18
EBIT	279,461.87
Add Extraordinary Income	-
<b>NPBT/(Net Loss)</b>	<b>279,461.87</b>
Income Tax Expense	69,865.47
NPAT /(Net Loss)	209,596.40
<b>TOTAL OPERATIONAL EXPENSES (OPEX)</b>	<b>23,949,387.34</b>
<b>TOTAL CAPITAL EXPENSES (CAPEX)</b>	<b>3,141,394.65</b>
<b>TOTAL OPEX + CAPEX</b>	<b>27,090,781.99</b>
<b>TOTAL REVENUE</b>	<b>24,228,849.21</b>
<b>DEFICIT</b>	<b>- 2,861,932.78</b>

## Electricity Demand and Sales

Electricity Sales Forecast		FY2021/22												2022
		July	August	September	October	November	December	January	February	March	April	May	June	
Energy Sector	Days	31	31	30	31	30	31	31	28	31	30	31	30	365
Residential - Prepaid <200	KWH	511,828	510,794	517,512	523,620	524,356	535,245	530,702	475,877	526,864	509,868	526,864	509,868	6,203,399
Residential - Prepaid >200	KWH	806,682	757,225	726,853	771,479	727,023	857,455	798,932	709,201	785,187	759,858	785,187	759,858	9,244,939
<b>Total Residential Prepaid</b>	<b>KWH</b>	<b>1,318,510</b>	<b>1,268,019</b>	<b>1,244,365</b>	<b>1,295,099</b>	<b>1,251,379</b>	<b>1,392,700</b>	<b>1,329,634</b>	<b>1,185,078</b>	<b>1,312,051</b>	<b>1,269,726</b>	<b>1,312,051</b>	<b>1,269,726</b>	<b>15,448,338</b>
Residential- Postpaid	KWH	230,745	224,044	186,826	175,679	172,698	214,297	129,232	173,668	192,275	186,073	192,275	186,073	2,263,884
Commercial- Prepaid	KWH	320,049	344,345	307,154	318,239	273,809	361,573	313,219	291,511	322,744	312,333	322,744	312,333	3,800,054
Commercial- Postpaid	KWH	349,737	335,229	331,562	353,322	377,343	414,048	482,913	344,355	381,250	368,952	381,250	368,952	4,488,913
Government	KWH	429,827	397,019	297,043	432,492	364,871	293,280	359,043	335,163	371,074	359,103	371,074	371,074	4,381,063
Industrial-Prepaid	KWH	9,600	16,572	21,586	19,143	17,715	18,857	17,000	15,690	17,371	16,810	17,371	16,810	204,524
Industrial-Postpaid	KWH	59,168	59,168	176,016	179,166	107,809	23,387	34,352	83,227	92,144	89,172	92,144.40	89,172	1,084,926
<b>Total Residential</b>	<b>KWH</b>	<b>1,549,255</b>	<b>1,492,063</b>	<b>1,431,191</b>	<b>1,470,778</b>	<b>1,424,077</b>	<b>1,606,997</b>	<b>1,458,866</b>	<b>1,358,746</b>	<b>1,504,326</b>	<b>1,455,799</b>	<b>1,504,326</b>	<b>1,455,799</b>	<b>17,712,223</b>
<b>Total Commercial</b>	<b>KWH</b>	<b>669,786</b>	<b>679,574</b>	<b>638,716</b>	<b>671,561</b>	<b>651,152</b>	<b>775,621</b>	<b>796,132</b>	<b>635,866</b>	<b>703,994</b>	<b>681,285</b>	<b>703,994</b>	<b>681,285</b>	<b>8,288,967</b>
<b>Total Government</b>	<b>KWH</b>	<b>429,827</b>	<b>397,019</b>	<b>297,043</b>	<b>432,492</b>	<b>364,871</b>	<b>293,280</b>	<b>359,043</b>	<b>335,163</b>	<b>371,074</b>	<b>359,103</b>	<b>371,074</b>	<b>371,074</b>	<b>4,381,063</b>
<b>Total Industrial</b>	<b>KWH</b>	<b>68,768</b>	<b>75,740</b>	<b>197,602</b>	<b>198,309</b>	<b>125,524</b>	<b>42,244</b>	<b>51,352</b>	<b>98,917</b>	<b>109,515</b>	<b>105,982</b>	<b>109,515</b>	<b>105,982</b>	<b>1,289,450</b>
<b>Total Energy Sales</b>	<b>KWH</b>	<b>2,717,636</b>	<b>2,644,396</b>	<b>2,564,552</b>	<b>2,773,140</b>	<b>2,565,624</b>	<b>2,718,142</b>	<b>2,665,393</b>	<b>2,428,692</b>	<b>2,688,909</b>	<b>2,602,170</b>	<b>2,688,909</b>	<b>2,614,140</b>	<b>31,671,702</b>
<b>Additional Demand (RPC 1)</b>														<b>8,288,967</b>
Commercial-Postpaid	KWH	148,800	148,800	144,000	148,800	144,000	148,800	148,800	134,400	148,800	144,000	148,800	144,000	1,752,000
<b>Total Commercial Postpaid</b>	<b>KWH</b>	<b>379,545</b>	<b>372,844</b>	<b>330,826</b>	<b>324,479</b>	<b>316,698</b>	<b>363,097</b>	<b>278,032</b>	<b>308,068</b>	<b>341,075</b>	<b>330,073</b>	<b>341,075</b>	<b>330,073</b>	<b>4,015,884</b>
<b>Total Commercial</b>	<b>KWH</b>	<b>818,586</b>	<b>828,374</b>	<b>782,716</b>	<b>820,361</b>	<b>795,152</b>	<b>924,421</b>	<b>944,932</b>	<b>770,266</b>	<b>852,794</b>	<b>825,285</b>	<b>852,794</b>	<b>825,285</b>	<b>10,040,967</b>
<b>Tariff</b>														<b>33,423,702</b>
Residential - Prepaid <200	\$/KWH	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	
Residential - Prepaid >200	\$/KWH	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	
Residential- Postpaid	\$/KWH	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	
Commercial- Prepaid	\$/KWH	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
Commercial- Postpaid	\$/KWH	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
Government	\$/KWH	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
Industrial-Prepaid	\$/KWH	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
Industrial-Postpaid	\$/KWH	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
RPC	\$/KWH	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
<b>Income</b>														
Residential - Prepaid <200	\$	112602.16	112374.68	113852.64	115196.4	115358.32	117753.9	116754.44	104692.982	115910.0872	112171.0521	115910.0872	112171.0521	1,364,747.80
Residential - Prepaid >200	\$	379,140.54	355,895.75	341,620.91	362,595.13	341,700.81	403,003.85	375,498.04	333,324.38	369,037.70	357,133.26	369,037.70	357,133.26	4,345,121.33
Residential- Postpaid	\$	110,758	107,541	89,676	84,326	82,895	102,863	62,031	83,361	92,292	89,315	92,292	89,315	1,086,664.55
Commercial- Prepaid	\$	224,034.30	241,041.50	215,007.80	222,767.30	191,666.30	253,101.10	219,253.30	204,057.70	225,921.02	218,633.25	225,921.02	218,633.25	2,660,037.83
Commercial- Postpaid	\$	244,815.90	234,660.30	232,093.40	247,325.40	264,140.10	289,833.60	338,039.10	241,048.46	266,875.08	258,266.20	266,875.08	258,266.20	3,142,238.82
Government	\$	300,878.90	277,913.30	207,930.10	302,744.40	255,409.70	205,296.00	251,330.10	234,614.28	259,751.52	251,372.44	259,751.52	259,751.52	3,066,743.79
Industrial-Prepaid	\$	6,720.00	11,600.40	15,110.20	13,400.10	12,400.50	13,199.90	11,900.00	10,982.65	12,159.37	11,767.13	12,159.37	11,767.13	143,166.75
Industrial-Postpaid	\$	41,417.60	41,417.60	123,211.20	125,416.20	75,466.30	16,370.90	24,046.40	58,259.04	64,501.08	62,420.40	64,501.08	62,420.40	759,448.20
<b>Total</b>	<b>\$</b>	<b>1,420,367.00</b>	<b>1,382,444.65</b>	<b>1,338,502.73</b>	<b>1,473,770.85</b>	<b>1,339,037.07</b>	<b>1,401,421.81</b>	<b>1,398,852.74</b>	<b>1,270,340.05</b>	<b>1,406,447.92</b>	<b>1,361,078.63</b>	<b>1,406,447.92</b>	<b>1,369,457.71</b>	<b>16,568,169.08</b>
<b>Additional Demand (RPC)</b>	<b>\$</b>	<b>104160</b>	<b>104160</b>	<b>100800</b>	<b>104160</b>	<b>100800</b>	<b>104160</b>	<b>104160</b>	<b>94080</b>	<b>104160</b>	<b>100800</b>	<b>104160</b>	<b>100800</b>	<b>1,226,400.00</b>
Government CSO	\$	127,957.00	127,698.50	129,378.00	130,905.00	131,089.00	133,811.25	132,675.50	118,969.30	131,716.01	127,467.10	131,716.01	127,467.10	1,550,849.77
	\$	129,237.48	129,237.48	129,237.48	129,237.48	129,237.48	129,237.48	129,237.48	129,237.48	129,237.48	129,237.48	129,237.48	129,237.48	1,550,849.77
<b>Total Electricity Income</b>	<b>\$</b>	<b>1,653,764.48</b>	<b>1,615,842.13</b>	<b>1,568,540.21</b>	<b>1,707,168.33</b>	<b>1,569,074.55</b>	<b>1,634,819.29</b>	<b>1,632,250.22</b>	<b>1,493,657.54</b>	<b>1,639,845.40</b>	<b>1,591,116.11</b>	<b>1,639,845.40</b>	<b>1,599,495.19</b>	<b>19,345,418.86</b>

## Non-Revenue Energy Component

Energy Budget				
Energy Sector	Forecasted demand	Demand	Tariff	Income
Energy Sales	KWH	%	\$/KWH	\$
Residential <200 (lifeline)	6,203,399	14%	0.22	1,364,747.80
Residential <200	9,244,939	21%	0.47	4,345,121.33
Residential Regular	2,263,884	5%	0.48	1,086,664.55
Commercial	8,288,967	19%	0.70	5,802,276.66
Government	4,381,063	10%	0.70	3,066,743.79
Industrial	1,289,450	3%	0.70	902,614.95
RPC Additional Demand	1,752,000	4%	0.70	1,226,400.00
<b>Energy Sales</b>	<b>33,423,702</b>	<b>77%</b>		<b>17,794,569.08</b>
<b>Government CSO</b>	6,203,399		0.25	<b>1,550,849.77</b>
<b>Total Energy Sales</b>				<b>19,345,418.86</b>
<b>Non Revenue Energy</b>				
NUC Offices	116,189	0.27%		
Staff Top Up Benefits	353,636	0.81%		
NUC Houses	54,278	0.12%		
Street Lights/ Public Lightin	290,608	0.67%		
Water Production Usage	1,487,998	3.41%		
<b>Total Non-Revenue Energy</b>	<b>2,302,709</b>	<b>5.28%</b>		
Energy Losses	7,897,069	<b>18%</b>		
<b>Total Energy Production</b>	<b>43,623,479</b>	<b>100%</b>		

	Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
<b>Non Revenue Energy</b>	Days	31	31	30	31	30	31	31	28	31	30	31	30	
NUC Offices	KWH	10435	10290	5037	9709	15539	6754	10676	8913	9868	9550	9868	9550	<b>116,189</b>
Staff Top Up Benefits	KWH	30667	30440	30213	29531	29076	29076	29303	27128	30035	29066	30035	29066	<b>353,636</b>
NUC Houses	KWH	5189	5090	6138	4726	4207	4069	2553	4164	4610	4461	4610	4461	<b>54,278</b>
Street Lights/ Public Lightin	KWH	24540	24540	24540	24540	24540	24540	23940	22293	24682	23886	24682	23886	<b>290,608</b>
Water Production Usage	KWH	135,583	118365	131983	128425	125595	126704	109837	114148	126378	122301	126378	122301	<b>1,487,998</b>
Total Non-Revenue Energy	KWH	206414	188725	197911	196931	198957	191143	176309	176,646	195,573	189,264	195,573	189,264	<b>2,302,709</b>
Total Energy Losses	KWH	776578.59	511730.8	537152.2	710930.5	692510	774942.88	647853	605,803	670,710	649,074	670,710	649,074	<b>7,897,069</b>

## Water Demand and Sales

### Water Volume Sales

WATER VOLUME SALES FY2021/22	Month	July	August	September	October	November	December	January	February	March	April	May	June	Total
	Days	31	31	30	31	30	31	31	28	31	30	31	30	365
Domestic Water Sales - prepaid	Litres	9,448,304	9,448,304	9,143,520	9,448,304	9,143,520	9,448,304	9,448,304	8,533,952	9,448,304	9,143,520	9,448,304	9,448,304	111,246,165
Domestic Water Sales - postpay	Litres	777,388	777,388	752,311	777,388	752,311	777,388	777,388	702,157	777,388	752,311	777,388	752,311	9,153,113
Commercial Water Sales - prepaid	Litres	237,210	237,210	229,559	237,210	229,559	237,210	237,210	214,255	237,210	229,559	237,210	229,559	2,792,962
Commercial Water Sales - postpay	Litres	82,421	82,421	79,763	82,421	79,763	82,421	82,421	74,445	82,421	79,763	82,421	79,763	970,444
Commercial - Anibare Lodge	Litres	243,414	243,414	235,562	243,414	235,562	243,414	243,414	219,858	243,414	235,562	243,414	235,562	2,866,000
Commercial - Anabar Pond Camp	Litres	326,477	326,477	315,945	326,477	315,945	326,477	326,477	294,882	326,477	315,945	326,477	315,945	3,844,000
Commercial - Ijuw Lodge	Litres	308,471	308,471	298,521	308,471	298,520.55	308,471.23	308,471.23	278,619.18	308,471.23	298,520.55	308,471.23	298,520.55	3,632,000
Government Water Sales - prepaid	Litres	10,318	10,318	9,986	10,318	9,986	10,318	10,318	9,320	10,318	9,986	10,318	9,986	121,492
Government Water Sales - postpay	Litres	1,151,198	1,151,198	1,114,063	1,151,198	1,114,063	1,151,198	1,151,198	1,039,792	1,151,198	1,114,063	1,151,198	1,114,063	13,554,430
Government of Nauru Schools	Litres	144,239	144,239	139,586	144,239	139,586	144,239	144,239	130,280	144,239	139,586	144,239	139,586	1,698,294
Government-Budapest Hotel	Litres	177,677	177,677	171,945	177,677	171,945	177,677	177,677	160,482	177,677	171,945	177,677	171,945	2,092,000
Industrial Water Sales - prepaid	Litres	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Water Sales - postpay	Litres	255,473.97	255,474	247,233	255,474	247,233	255,474	255,474	230,751	255,474	247,233	255,474	247,233	3,008,000
														0
<b>Total Domestic</b>	Litres	10,225,692	10,225,692	9,895,831	10,225,692	9,895,831	10,225,692	10,225,692	9,236,109	10,225,692	9,895,831	10,225,692	10,200,615	120,399,278
<b>Total Commercial</b>	Litres	1,197,993	1,197,993	1,159,348	1,197,993	1,159,348	1,197,993	1,197,993	1,082,059	1,197,993	1,159,348	1,197,993	1,159,348	14,105,406
<b>Total Government</b>	Litres	1,483,432	1,483,432	1,435,579	1,483,432	1,435,579	1,483,432	1,483,432	1,339,874	1,483,432	1,435,579	1,483,432	1,435,579	17,466,216
<b>Total Industrial</b>	Litres	255,474	255,474	247,233	255,474	247,233	255,474	255,474	230,751	255,474	247,233	255,474	247,233	3,008,000
<b>Total Sales</b>	Litres													154,978,901
<b>Meneng Hotel (Piped water)</b>														
Fresh Water	Litres	1,287,222	1,287,222	1,245,699	1,287,222	1,245,699	1,287,222	1,287,222	1,162,652	1,287,222	1,245,699	1,287,222	1,245,699	15,156,000
Sea Water	Litres	2,450,444	2,450,444	2,371,397	2,450,444	2,371,397	2,450,444	2,450,444	2,213,304	2,450,444	2,371,397	2,450,444	2,371,397	28,852,000
														-
<b>Refugee Processing Centre (RPC)</b>	Litres	7,687,066	7,687,066	7,439,096	7,687,066	7,439,096	7,687,066	7,687,066	6,943,156	7,687,066	7,439,096	7,687,066	7,439,096	90,509,000
											<b>Total -Fresh Water Volume Sales</b>			260,643,901
											<b>Total- Sea Water Volume Sales</b>			28,852,000

## Water Delivery Sales

Most water is delivered to customer water tanks by water tankers. Delivery charges are set based on the customer category and choice of water tanker. Those who wish to use their own water tanker are charged differently from those who choose delivery by NUC tankers.

The number of water deliveries forecasted for 2022 is:

Water Delivery Sales														
Number of Deliveries														
Domestic Water Deliveries < 5000L	#	1,309	1,309	1,266	1,309	1,266	1,309	1,309	1,182	1,309	1,266	1,309	1,266	15,408
Domestic Water Deliveries > 5000L	#	462	462	447	462	447	462	462	418	462	447	462	447	5,444
Commercial Water Deliveries	#	29	29	28	29	28	29	29	26	29	28	29	28	342
Government Water Deliveries	#	148	148	143	148	143	148	148	133	148	143	148	143	1,740
Water Own Uplift	#	125	125	121	125	121	125	125	113	125	121	125	121	1,476
RPC Own Uplift	#	864	864	836	864	836	864	864	780	864	836	864	836	10,170
<b>Total Number of deliveries</b>														<b>34,580</b>

## Water Volume Sales Income

Water Tariff	\$/L													
Domestic	\$/L	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	0.0084	
Commercial	\$/L	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	
Government	\$/L	0.01553	0.01553	0.01553	0.01553	0.01553	0.01553	0.01553	0.01553	0.01553	0.01553	0.01553	0.01553	
Industrial	\$/L	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	
Meneng Hotel piped Fresh Water	\$/L	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	
Meneng Hotel piped Sea Water	\$/L	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	
Refugee Processing Centre RPC's	\$/L	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	0.0118	
<b>Income</b>														
Domestic	\$	85,896	85,896	83,125	85,896	83,125	85,896	85,896	77,583	85,896	83,125	85,896	83,125	1,011,354
Commercial	\$	14,136	14,136	13,680	14,136	13,680	14,136	14,136	12,768	14,136	13,680	14,136	13,680	166,444
Government	\$	23,038	23,038	22,295	23,038	22,295	23,038	23,038	20,808	23,038	22,295	23,038	22,295	271,250
Industrial	\$	3,015	3,015	2,917	3,015	2,917	3,015	3,015	2,723	3,015	2,917	3,015	2,917	35,494
Meneng Hotel piped Fresh Water	\$	15,189	15,189	14,699	15,189	14,699	15,189	15,189	13,719	15,189	14,699	15,189	14,699	178,841
Meneng Hotel piped Sea Water	\$	7,351.33	7,351.33	7,114.19	7,351.33	7,114.19	7,351.33	7,351.33	6,639.91	7,351.33	7,114.19	7,351.33	7,114.19	86,556
Refugee Processing Centre RPC's	\$	90,707	90,707	87,781	90,707	87,781	90,707	90,707	81,929	90,707	87,781	90,707	87,781	1,068,006
<b>Income from Water Volume Sales</b>	<b>\$</b>	<b>239,332</b>	<b>239,332</b>	<b>231,612</b>	<b>239,332</b>	<b>231,612</b>	<b>239,332</b>	<b>239,332</b>	<b>216,171</b>	<b>239,332</b>	<b>231,612</b>	<b>239,332</b>	<b>231,612</b>	<b>2,817,945</b>

## Water Delivery Sales Income

<b>Delivery Charges</b>														
Domestic Water Deliveries < 5000L	\$/#	5	5	5	5	5	5	5	5	5	5	5	5	
Domestic Water Deliveries > 5000L	\$/#	10	10	10	10	10	10	10	10	10	10	10	10	
Commercial Water Deliveries	\$/#	263.49	263.49	263.49	263.49	263.49	263.49	263.49	263.49	263.49	263.49	263.49	263.49	
Government Water Deliveries	\$/#	217.47	217.47	217.47	217.47	217.47	217.47	217.47	217.47	217.47	217.47	217.47	217.47	
Water Own Uplift	\$/#	117.25	117.25	117.25	117.25	117.25	117.25	117.25	117.25	117.25	117.25	117.25	117.25	
RPC Own Uplift	\$/#	117.25	117.25	117.25	117.25	117.25	117.25	117.25	117.25	117.25	117.25	117.25	117.25	
<b>Water Delivery Income</b>														
Domestic Water Deliveries < 5000L	\$	6,543	6,543	6,332	6,543	6,332	6,543	6,543	5,910	6,543	6,332	6,543	6,332	77,040.00
Domestic Water Deliveries > 5000L	\$	4,624	4,624	4,475	4,624	4,475	4,624	4,624	4,176	4,624	4,475	4,624	4,475	54,440
Commercial Water Deliveries	\$	7,653	7,653	7,407	7,653	7,407	7,653	7,653	6,913	7,653	7,407	7,653	7,407	90,114
Government Water Deliveries	\$	32,137.90	32,137.90	31,101.19	32,137.90	31,101.19	32,137.90	32,137.90	29,027.78	32,137.90	31,101.19	32,137.90	31,101.19	378,398
Water Own Uplift	\$	14,698	14,698	14,224	14,698	14,224	14,698	14,698	13,276	14,698	14,224	14,698	14,224	173,061
RPC Own Uplift	\$	101,275	101,275	98,008	101,275	98,008	101,275	101,275	91,474	101,275	98,008	101,275	98,008	1,192,433
<b>Total Delivery Income</b>	\$	166,931.59	166,931.59	161,546.70	166,931.59	161,546.70	166,931.59	166,931.59	150,776.92	166,931.59	161,546.70	166,931.59	161,546.70	1,965,485

Summary of Water Sales Income

<b>Water Sales-Volume</b>	<b>Volume-Litres</b>	<b>Rate-\$/Litre</b>	<b>Income-\$</b>
Domestic	120,399,278	0.0084	\$ 1,011,353.94
Commercial	14,105,406	0.0118	\$ 166,443.80
Government	17,466,216	0.01553	\$ 271,250.34
Industrial	3,008,000	0.0118	\$ 35,494.40
Meneng Hotel piped Fresh Water	15,156,000	0.0118	\$ 178,840.80
<b>Refugee Processing Centre RPC's</b>	<b>90,509,000</b>	<b>0.0118</b>	<b>\$ 1,068,006.20</b>
<b>Total Fresh Water</b>	<b>260,643,901</b>		<b>\$ 2,731,389.47</b>
Meneng Hotel piped Sea Water	28,852,000	0.003	\$ 86,556.00
<b>Total Water Volume Sales Income</b>			<b>\$ 2,817,945.47</b>
<b>Water Sales-Delivery</b>	<b># of Deliveries</b>	<b>Rates per delivery-\$</b>	<b>Income-\$</b>
Domestic Water Deliveries < 5000L	15,408	\$ 5.00	\$ 77,040.00
Domestic Water Deliveries > 5000L	5,444	\$ 10.00	\$ 54,440.00
Commercial Water Deliveries	342	\$ 263.49	\$ 90,113.58
Government Water Deliveries	1,740	\$ 217.47	\$ 378,397.80
Water Own Uplift	1,476	\$ 117.25	\$ 173,061.00
<b>RPC Own Uplift</b>	<b>10,170</b>	<b>\$ 117.25</b>	<b>\$ 1,192,432.50</b>
<b>Total Delivery Income</b>			<b>\$ 1,965,484.88</b>
	<b>Total Water Sales Income</b>		<b>\$ 4,783,430.35</b>

## NUC Expense Budget

### Fuel and Lubricating Oil

NUC's fuel and oil budget forms the largest component of NUC operating expenses.

The following table presents the assumptions made and the resulting budget estimate.

	GWH	%
Total Energy Produced	43.623	100%
Total Solar Energy Produced	4.18	9%
Total Diesel Energy Produced	39.443	91%
Specific Fuel Consumption (Litres/kWh)	4.0	
Diesel Fuel (KL)	9,648	
Average Price (\$/L)	1.09	
<b>Diesel Fuel Budget (\$)</b>	<b>10,536,576</b>	

### Capital Expenses

#	Item	Department	Budget
1	Man Engines Top Overhaul x 2	Power Generation	1,500,000.00
2	G1 Major Overhaul & Assembly	Power Generation	200,000.00
3	Construction of Pump Service & Hydraulics room	Power Generation	54,000.00
4	Disaster Management & Recovery Plan	ICT	126,000.00
5	Cherry Picker Truck-12.5m Boom	Power Distribution/Metering	250,000.00
6	3 ton Twin-cab, canopy & Toolbox x2	Power Distribution	200,000.00
7	Street lights	Power Distribution/Metering	50,000.00
8	11kv Switchgear - Domestic Feeder	Power Distribution	65,000.00
9	Replacement of old vehicles	Projects/ICT/Health&Safety/Deputy Chair	160,000.00
10	GPS	Design & Planning	30,000.00
11	Construction of Training Room	Corporate	89,210.65
12	Construction of Generation Office	Power Generation	52,654.00
13	Replacement of Tools & Equipments	ICT/HR	4,530.00
14	Power Station Overhead Crane	Power Generation	160,000.00
15	Scada System upgrade-incorporate Water operations	Water Operations	100,000.00
16	Menen Water Production	Water Production	100,000.00
	<b>TOTAL</b>		<b>\$ 3,141,394.65</b>

NUC funded Capital expenditure needs to be recovered from the tariffs.

Capex is required for renewal or expansion of the grid, plant and equipment on an ongoing basis to maintain the current level of reliability, security of supply for both electricity or water.

Capex is required to reduce plant breakdowns and outages, to reduce operating and maintenance costs and to meet customer demand.

To enable NUC to deliver the level of service required by customers and which they are willing to pay for.

Sustainable, safe, reliable, secure and affordable electricity and water supply is dependent of prudent investments in capital and efficient operation and maintenance costs, which is in the long-term interest of consumers.

Currently this is funded only from surplus revenue from NUC operations. It is susceptible to NUC obtaining sufficient revenue over the financial year, uncontrolled costs (fuel) and demand fluctuations.

#	Item	Department	Budget
1	National Grid Low Voltage Refurbishment	Power Distribution	1,643,149.94
2	Underground Water Rectification-NUC to RON via Location + PS Fire Hydrant System	Water Distribution	2,400,000.00
3	High Voltage Grid extension to RPC 2	Power Distribution	411,361.45
4	Relocation of High Speed Generators to ADB Solar Site	Power Generation	750,000.00
5	Location Feeder Upgrade to 11KV	Power Generation/Distribution	143,000.00
<b>Total</b>			<b>\$5,347,511.39</b>

Capital projects seeking donor assistance were forecasted at \$5,347,511 (\$5.4M)

Currently ADB funded 6 MW Solar Development Project underway and scheduled for completion by end of 2022. This will increase renewable energy capacity from 3% to 47% of installed generation capacity.

Other projects funded by EU, NZMFAT, USAID, AUSAID, ADB other donors as requested.