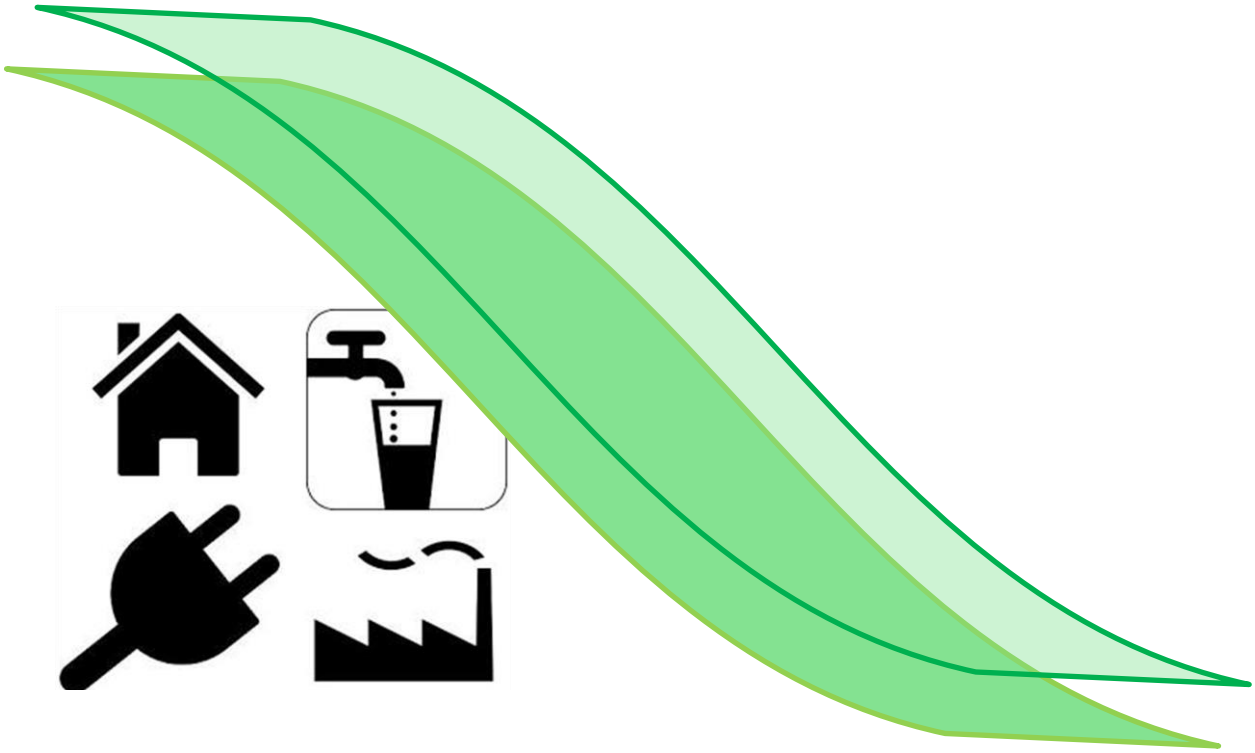
Authority's Commission Order

Case U-0006-25

In the Matter of Wintua and Lorlow Minigrid Tariff Review

July 2025



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1 Executive Summary

The Utilities Regulatory Authority (the Authority) Commission is issuing this Electricity Tariff Commission Order under Section 18(1) of the Utilities Regulatory Authority Act No. 11 of 2007 (as amended), for the Wintua and Lorlow Electricity Cooperative Society Ltd, which is managing and operating the mini grid in Southwest Malekula.

The Authority conducted a site visit to the Wintua and Lorlow mini grid from 15th April to 18th April 2025 to identify and verify key issues, consult with the Wintua and Lorlow Electricity Cooperative Society Ltd, and provide assistance and recommendations where necessary.

The issues and recommendations are outlined in this determination. A key concern raised relates to the management of the mini grid, where frequent turnover of managers has resulted in inadequate oversight of both financial and technical operations. To address this, the Authority recommends that during the tariff period from August 2025 to August 2026, the operator must fulfill its responsibilities as a utility provider by ensuring that all relevant financial and technical data are accurately recorded and submitted to the Authority. Furthermore, the operator's management and staff should possess a sound understanding of utility operations, including billing, revenue collection, record-keeping, and effective management of network performance.

The site visit and data provided by the Wintua and Lorlow Electricity Cooperative Society Ltd have supported the Authority in deriving the tariff determination, as summarized in the table below.

Table 1: Wintua and Lorlow Mini Grid Tariff Determination.

Description	Unit	Amounts
Personnel Cost	**Vatu**	**1,920,672**
Office Cost	**Vatu**	**443,500**
Fuel & Lubricant expenses	Vatu	140,000
Administrative & Office expenses- Rent	Vatu	50,000
Repair and maintenance expense	Vatu	151,500
Cooperative members sitting allowances	Vatu	42,000
Business License & Annual Registration	Vatu	15,000
Transportation (boat and vehicle)	Vatu	30,000
Other expenses	Vatu	15,000
Depreciation	**Vatu**	**694,359**
Required Revenue	**Vatu**	**3,053,059**
Demand	**kWh**	**46,009**
Tariff	**Vatu/kWh**	**67.00**

Therefore, the tariff determined for the tariff period and to be applied by the Wintua and Lorlow Electricity Cooperative Society Ltd is **Vt/kWh 67.00.** This is 31% increase from the current tariff of Vt/kWh 51.00.

2 Introduction

Table 2: Case Information

Case Number	U-0006-25
In the matter of	Wintua and Lorlow Mini Grid Tariff Review
Date of Decision	July 2025

2.1 Background

The Government of Vanuatu, through the Ministry of Climate Change, with funding and support from the Government of Austria, has implemented a solar mini grid located in Southwest Bay, Malekula. This project was coordinated under the Nationally Appropriate Mitigation Action (NAMA) program as part of the National Energy Road Map (NERM), aimed at increasing electricity access in rural communities specifically for the villages of Wintua and Lorlow.

The Wintua/Lorlow electricity network is a three-phase distribution system supplying 400V for three-phase connections and 230V for single-phase connections, operating at 50Hz. The grid is powered by a 67.2kWp solar photovoltaic (PV) system that supplies electricity directly to the network during daylight hours when solar irradiance is sufficient. During nighttime or periods of low sunlight, electricity is supplied from three 48V battery banks with a combined storage capacity of 470 kWh. An additional 7.92kWp of solar PV panels, mounted on the powerhouse rooftop, supplement battery charging during the day. All transmission lines within the Wintua and Lorlow villages are installed underground, apart from a short 5-meter overhead aerial crossing at the river between Lorlow and its adjacent village.

In June 2024, the Authority conducted a tariff review and determined a tariff of Vt/kWh 51.00, to apply for a one-year period ending on 24th June 2025. On 4th April 2025, the Authority initiated the tariff review process; however, it was delayed as the 2024 audited financial report for Wintua/Lorlow was not yet available and was expected to be released on 18th June. Following its availability, the Authority formally commenced a new tariff review on 24th June 2025 and requested updated operational data from the operator, the Wintua and Lorlow Electricity Cooperative Society Ltd, to support the assessment

However, frequent turnover in the cooperative's management led to the loss of essential financial and technical records, hindering the provision of a complete data set. This also resulted in non-compliance with the previously approved tariff — at one point, the operator charged customers only 10 Vatu/kWh instead of the approved 51 Vatu/kWh. This misapplication significantly reduced revenue collection and prevented the accumulation of savings intended for reinvestment enabling sustainability of the grid.

Despite these challenges, the current management was able to retrieve and submit a portion of the relevant data which the Authority used to inform the current tariff determination.

A site inspection was carried out by the Authority from 15th to 18th July 2025, and the findings and recommendations from this visit are detailed in this report.

2.2 Purpose and Structure of this document

The purpose of this document is to present the Authority's tariff determination for the Wintua and Lorlow mini grid in Southwest Malekula.

This document is structured as follows:

Section 3 provides the Authority's site visitation findings, recommendations and any Authority assistance provided

Section 4 provide the Authority Methodology in determining the tariff for the tariff period.

Section 5 presents the determination of the tariff model components

Section 6 outlines the Wintua and Lorlow mini grid tariff determination for the tariff period.

2.3 Legislative Requirements & Framework

The legislative requirements and framework are provided for under the Utilities Regulatory Act No.11 of 2007 (as mended).

Section 12 provides for the functions of the Authority which includes under paragraph 12(1)(a) the exercise of the functions and powers conferred by the Act or by any other Act in furtherance of the purposes of the Act.

Section 18 of the URA Act provides for the Authority to determine the maximum price which may be charged in relation to any aspect of a regulated service in Vanuatu.

This Commission Order is issued under Section 18 (1) of the URA Act determining the effective tariff for the tariff period as defined in this document.

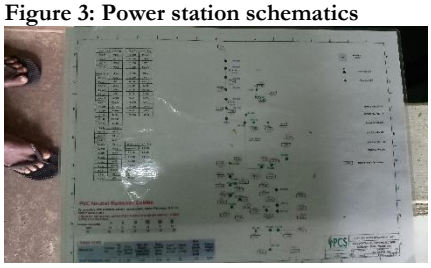
3 Site Visitation Findings and Recommendations

3.1 Technical

Power and Communication Solutions (PCS) Limited, Vanuatu, played a central role in the establishment of the Wintua and Lorlow mini grid system. Contracted by the Ministry of Climate Change (MoCC), PCS was responsible for the supply, delivery, installation, and commissioning of the project. Beyond the initial setup, PCS was also mandated to provide technical operations and maintenance support for one year following commissioning. To this day, PCS continues to support the mini grid by offering ongoing technical assistance, supplying essential electrical components to sustain and expand the system, and facilitating the electricity payment process through its proprietary software system.

Table 3: Description of Technical Issues and Recommended Actions

Description	Picture(s)	Recommended Action(s)
Pillar Distribution numbers are not clear.	**Figure 1: Pillar Distribution**  *Source: URA, July 2025*	Distribution pillar numbers need to be clearly written to assist the technical operations of the network going forward.
Main distribution cable supplying electricity to Lorlow community across the river was exposed at an approximate distance of less than 2 meters.	**Figure 2: Main Distribution Cable to Lorlow**  *Source: URA, July 2025*	Given that the cable outer sheath is manufactured from PVC ensuring it is water resistance, PCS to produce a Standard Operating Procedure (SOP) to manage the system especially during bad weather(s). The SOP will outline required actions to be addressed before and/or after tropical cyclones to ensure the entire network including the cable is inspected before power is restored.

Power station schematics not posted on walls.	**Figure 3: Power station schematics**  *Source: URA, July 2025*	All network and wiring schematics produced by the contractor (PCS) need to be posted on walls for future inspections.
No Office Space to address administrative matters.		An office space is required now to assist the financial and technical operations of the system and ensure the staffs are working within the operational hours (8 hours) prescribed under the tariff.
Damaged items need to be removed for recycling.	**Figure 4: Damaged Items**  *Source: URA, July 2025*	Damaged items stored inside the power station like the panels need to be removed and transported for recycling. This also include faulty lead acid batteries removed from the system.

3.2 Daily Operations

The daily operations of the Wintua and Lorlow mini grid are catered for by the Manager and staff on site. The manager is responsible for collecting electricity prepayment funds from customers. Once payment is received, the manager uses a laptop equipped with PCS software to verify customer details, process the transaction, and can generate a pin number that is then provided to the mini-grid customers who then enters it into their meter allowing for a top up of electricity credit.

3.2.1 Operational Issues Identified

These are some of the operational issues identified during the tariff review process and verified by the Authority while on site on 16th April are listed as follows:

1. **Lack of Proper Bookkeeping**: The bookkeeping is done by the Manager on site, due to frequent turnover of managers, the current management has faced difficulties in retrieving historical data.
2. **Electricity customers do not respect administrative hours**: Due to this lack of adherence to administrative hours, customers often contact the manager at all hours of the day and even at night

which does not align with the tariff set that can only accommodate certain hours and related cost to keep the tariff at an affordable level.

3.2.2 Recommendations to Operational Issues

The Authority while on site made the following recommendations to the operational issues, it is outlined as follows.

1. While on site, the Authority explained to Wintua/Lorlow management to carry out its responsibilities as a utility business by ensuring that all necessary financial and technical data are properly recorded, maintained, and submitted to the Authority monthly This includes the accurate and consistent documentation of all operational and financial records such as receipts and invoices issued to customers, records of electricity generation and consumption (from both solar and diesel sources), detailed logs of fuel usage including quantities and costs, routine maintenance activities, and all revenue collected from electricity sales. It is also recommended that a standardized template or logbook system be introduced to keep track of electricity sold by the customer category, in doing so it will address operational issue no. 1. The Authority will develop an operational procedure that will address operational issue no.2, it will be included in the appendix of this document.

3.3 Management

3.3.1 Management Issues Identified

While the Authority was on site on 16th July, the staff have met the with the manager of the Wintua and Lorlow Electricity services and have identified the following issues:

1. **Lack of Understanding of Tariff to be applied**: Based on the data provided, it was identified that during a brief period, the management applied a tariff of Vt/kWh 10, instead of the approved rate of Vt/kWh 51 as determined by the URA for that one-year tariff period. This unapproved change in tariff resulted in lower revenue collection and may have negatively impacted on the financial performance and sustainability of the mini grid.
2. **There continues to be a lack of effective oversight by both the committee and the management team** in the areas of network supervision and technical operations of the mini grid.

3.3.2 Recommendations to Management Issues

The Authority on site has assisted and provided the following recommendations:

1. It is recommended that the current management strictly adhere to the tariff approved and issued by the Authority for the specified tariff period. Any deviation from the approved rate—such as applying an unapproved or lower tariff—must be avoided, as it undermines the financial sustainability of the mini-grid.
2. The Authority recommends the current management to strengthen routine monitoring and ensure clear roles and responsibilities between the committee and management are essential for improving the reliability and performance of the mini-grid system.

4 Methodology: Tariff Building Blocks

The Authority has undertaken and followed through with its transparent and rigorous process of determining a tariff for the Wintua/Lorlow solar mini grid.

The following process has been adhered to:

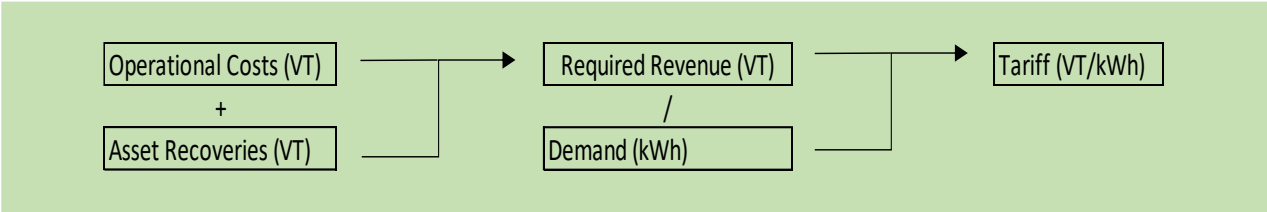
1. Data and information verification, assessment, and analysis.
2. Subsequent meetings with relevant stakeholders for data and assistance.
3. An on-site inspection of the mini grid was carried out to verify system operations and support the finalization of the proposed tariff.
4. Completion and Finalization of tentative tariff determination and Commission Order.

The Authority uses a cost-of-service approach in constructing the cost components of its tariff model. The mini grid cost components considered are deemed reasonable and prudent, forming the annual Required Revenue base used in determining the tariff. A brief description of the cost components is outlined below:

- Operational Costs – These are costs incurred in operating the mini grid, includes personnel costs, administration costs, and operation and maintenance costs.
- Asset Recoveries – These are annual recoveries associated with assets included in the regulatory asset base. Asset recoveries are necessary for project funded mini grid systems as it is a one-off financing, therefore replacement cost of assets need to be factored into the tariff ensuring mini grid sustainability.

Based on the tariff building blocks, the tariff model is designed to ensure that the tariff allows the mini grid management to recover sufficient revenue to replace assets and to meet operational costs incurred during the tariff period.

Figure 5: Tariff Model



As can be observed from Figure 5 above, the Authority determined reasonable and prudent operational costs have been added together with the computed annual asset recovery to arrive at the annual revenue required for the tariff period. Annual demand for the tariff period is divided by the required revenue base to arrive at the applicable tariff for the tariff period.

5 Tariff Model Components

This section provides an overview of the individual tariff model components and assumptions utilized in deriving these components.

5.1 Demand and Generation

This sub section provides the mini grid generation requirements to meet demand.

5.1.1 Demand and Consumption

The Demand data is available from January 2023 to December 2024 allowing the Authority to determine the number of customers and demand requirement for that period.

Table 4: Wintua/Lorlow Grid Customer Numbers as of December 2024

Customer number by category	**97**
Public Customers (Government institutions, schools, clinic)	11
Commercial customers (shops, cooperatives)	2
Households	84

From the tariff set in 2024, the number of customers identified was 128. In December 2024, the number of customers identified were 97 customers who were responsible for paying electricity bills.

Table 5: Wintua/Lorlow Mini Grid Demand 2023 – 2024

Energy sold to Customer	**Unit**	**2023**	**2024**	**2025e**
Customer	kWh	43,204	48,814	46,009
% Change			**13%**	**-6%**

From the table above, the power invoiced by the operator from 2023 to 2024 is presented. For 2023, the total power invoiced was calculated by summing the monthly data available for that year, and the same method was applied for the year 2024. Based on this data, an estimate was made for the 2025 electricity demand. It is important to note that a breakdown of consumption by customer category was not possible, as the data provided by the operator did not identify customer types. As a result, the forecast for 2025 has been kept conservative, with an estimated annual consumption of **46,009 kWh** to be used as the projected demand for the tariff period.

5.1.2 Generation and Distribution Forecast (in kWh)

When calculating the generation forecast of the system, the Authority's staff used historical data of the annual electricity generation of 2023 to 2024. Total production in 2023 and 2024 shows production of electricity was from solar and diesel generation. On the consumption side, it indicates that electricity usage is significantly lower during the daytime compared to nighttime. This imbalance has contributed to the early degradation of the battery system, as limited daytime usage results in underutilization of solar power and increased reliance on lead acid batteries during the afternoon till early morning to meet demand.

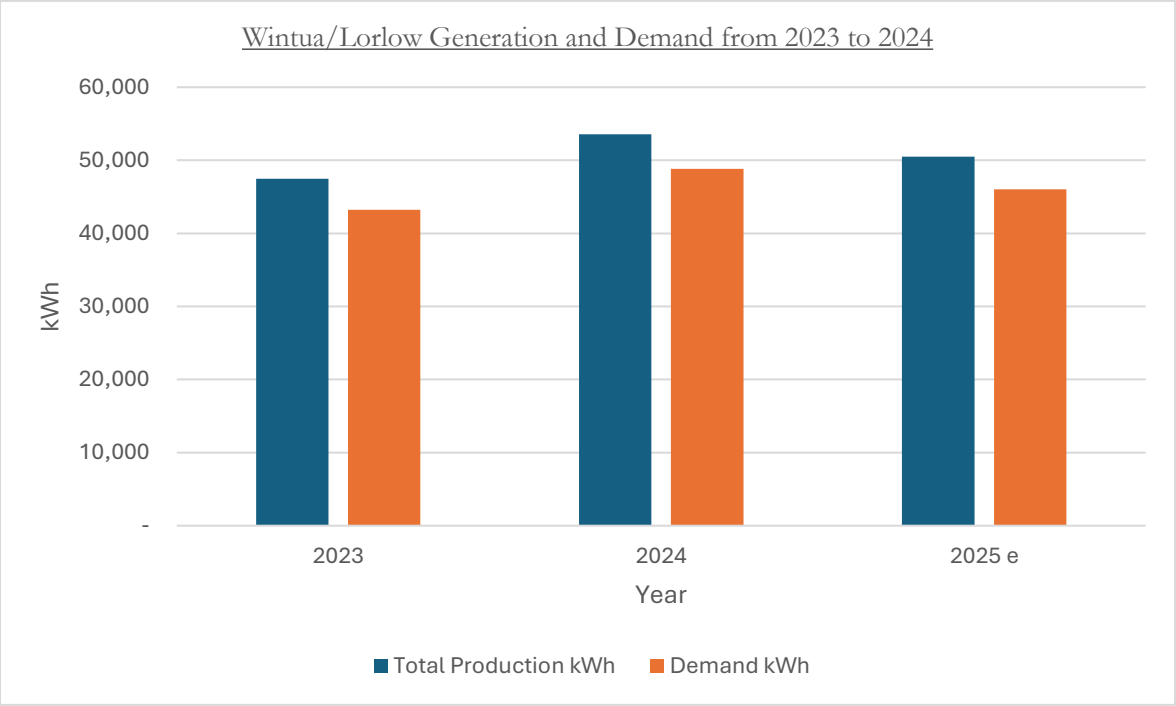
For this tariff determination, electricity generation has been forecasted at 50,515 kWh. The Authority staff also allowed for a degrading factor of 5%, meaning the staff assumes a total of 2,525.75 kWh will not be produced

during the applicable tariff period due to the degradation of the solar. Therefore, the calculated production generation used in the tariff review is **47,989.25 kWh.** So, generation is 47,989.25 kWh and consumption is 46,009 kWh, the difference is 1,980.25 kWh. The system generated 1,980.25 kWh, which is the excess power generated by the solar PV system. Solar power is produced during the day, but demand is low at that time, so much of it is either unused or stored in batteries. At night, when demand increases and there's no solar generation, the system relies heavily on batteries. The high reliance on batteries increases the degradation of the batteries that increases over time.

Table 6: Wintua and Lorlow Generation Forecast

	unit	2024	2023	2025 e
Total Production (Solar, Diesel and Battery)	kWh	53,573	47,457	50,515

Figure 6: Wintua/Lorlow Generation and Demand from 2023 to 2024



5.2 Operational Cost

This subsection provides the reasonable and prudent Wintua/Lorlow mini grid operational cost for the tariff period.

Table 7: Summary of Wintua/Lorlow Annual Operation Costs (in Vatu)

Operational Expenses		Amounts
1.0 Personnel Cost		**1,920,672**
1.1	Manager	865,280
1.2	Technical Staff	757,120
1.3	Part time Technical Staff	227,136
1.4	Employer VNPF contribution - 4%	71,136
2.0 Office Cost		**443,500**
2.1	Fuel & Lubricant expenses	140,000
2.2	Administrative & Office expenses- Rent	50,000
2.3	Repair and maintenance expense	151,500
2.4	Cooperative members sitting allowances	42,000
2.5	Business License & Annual Registration	15,000
2.6	Transportation (boat and vehicle)	30,000
2.7	Other expenses	15,000
	Total Operating expense	**2,364,172**

1. Personnel Costs include salaries of the Wintua mini grid staff.
   - 1.1 The Manager is to continue with the 40 hours/week routine. This cost includes VNPF contributions. Their hourly rate is now 400 VT/hour
   - 1.2 The Technician is to continue with the 40 hours/week. This cost includes VNPF contributions. Their hourly rate is now 350 VT/hour
   - 1.3 Part-time technical staff is to continue with the 12 hours/week. This includes VNPF contributions. Their hourly rate is now 350 VT/hour
   - 1.4 Employer VNPF contributions are compulsory financial obligation and should be accounted as part of the total employment expense.

2. Office costs include costs to maintain administrative and accounting duties.
   - 2.1 Fuel & Lubricant expenses are the cost of running the generator, as there were issues with the battery, the generator was used as the back up source of generation.
   - 2.2 Administrative and Office Rent, the cost of renting out a space for which the Wintua/Lorlow Electrical Cooperative can run its operations
   - 2.3 Repair and Maintenance cost, funds to meet any maintenance cost that may arise during the tariff period.
   - 2.4 Cooperative members sitting allowance; the allowance given to committee members.
   - 2.5 Business License and Annual Registration; cost to renew these licenses.
   - 2.6 Transportation expenses. Cost of transportation required for the operation of the office.
   - 2.7 Other expenses, cost associated with expenses that are outside the scope of the administrative and accounting duties

5.3 Asset Recovery

This Subsection provides the Authority's treatment of the Wintua/Lorlow mini grid's capital costs.

The table below outlines the Authority's computation of the mini-grid's annual recovery of assets' costs.

Table 8: Wintua/Lorlow Mini Grid Asset Recovery Cost

Asset Function	Asset Life	Cost	2024
Roof Mounted PV	20	4,926,600	246,330
Ground Mounted PV	20	579,600	28,980
AC Inverter Charger - Batteries	10	2,044,080	204,408
Roof PV DC Solar Controller	10	220,000	22,000
AC Solar Inverter	10	1,570,470	157,047
Battery Storage	10	9,792,000	979,200
Backup Generator	10	3,237,480	323,748
Powerhouse Cooling	10	736,000	73,600
PV Ground Mount screw	20	1,680,000	84,000
Distribution	10	3,560,000	356,000
Distribution	10	2,900,000	290,000
Distribution	10	2,912,000	291,200
Distribution	10	410,000	41,000
Distribution	10	275,000	27,500
Distribution	10	712,800	71,280
Distribution	10	531,120	53,112
Meter Electricity	10	1,606,400	160,640
Powerhouse Lighting	2	19,350	9,675
Office Laptop	5	123,195	24,639
Relocation for Crossing to Lorlow	4	4,200,000	1,050,000
Total Asset Cost/ Asset Recovery		**42,036,095**	**4,494,359**

Wintua/Lorlow mini grid total annual recovery assets are a list of assets that are essential in the mini grid system which are important to the production, distribution, and storage. The total annual asset recovery cost for Wintua/Lorlow is estimated **at Vt 4,494,359**, based on the calculated asset value and its expected useful life.

However, the Authority has approached Wintua/Lorlow Cooperative and the Office of the Registrar of Co-operatives & Business Development Services if they can assist in subsidizing the asset cost, and each has agreed in principle to provide **VT 800,000**[1] and **VT 3,000,000**[2] respectively, which totals to **VT 3,800,000.** This is then used to offset the total annual asset recovery cost to **VT 694,359**.

As such, the Authority has only included the balance Asset recovery amount of **VT 694,359** in this tariff determination.

[1] The agreement still needs to be formalized during a committee meeting. Once approved, the funds will be transferred into the designated depreciation account.

[2] The Director of ORCBDS has been informed via email and confirmation is now pending, after which the funds will be transferred to the Wintua and Lorlow Electricity Cooperative Society Ltd's depreciation account.

6 Authority Tariff Determination

The Authority's tariff determination for the tariff period August 2025 to August 2026 based on the Authority staff visit and methodology utilized has resulted in the tariff outlined in the table below.

Table 9: Wintua/Lorlow Mini Grid Tariff Determination

Description	Unit	Amounts
Personnel Cost	**Vatu**	**1,920,672**
Office Cost	**Vatu**	**443,500**
Fuel & Lubricant expenses	Vatu	140,000
Administrative & Office expenses- Rent	Vatu	50,000
Repair and maintenance expense	Vatu	151,500
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Transportation (boat and vehicle)	Vatu	30,000
Other expenses	Vatu	15,000
Depreciation	**Vatu**	**694,359**
Required Revenue	**Vatu**	**3,053,059**
Demand	**kWh**	**46,009**
Tariff	**Vatu/kWh**	**67.00**

The tariff determined is a flat rate of **Vt/kWh 67.00** for the tariff period for the Wintua and Lorlow electricity consumers. The rate determined is a **31%** increase from the current rate of Vt/kWh 51.00.

There are no additional charges apart from the tariff set. Value Added Tax (VAT) does not apply as the revenue generated falls below Vt 4 million, and the URA surcharge is waived for this tariff period.

7 Notice of Grievance

If the utility or any affected person is aggrieved by the Determination in this Order, it may request the Authority to reconsider the decision on issues aggrieved upon. A Notice of Grievance must be submitted within 30 days of the Order's gazettal. The Notice should contain:

- The issue or issues being contested
- A detailed description of any facts or matters supporting the grievance
- Copies of any documents supporting the grievance
- A detailed description of any alleged error of law or fact
- A detailed description of any relevant change in facts or circumstances since the Authorities Final Decision.

A Notice of Grievance can be addressed to:

Jesse Benjamin
Chief Executive Officer
Utilities Regulatory Authority

The Notice may be:

- Delivered in person at:

  Office of the Utilities Regulatory Authority
  No.2 Area, Rue Langduedoc
  Port Vila, Vanuatu

- Mailed to:
  Case U-0006-25
  Utilities Regulatory Authority
  P.M.B 9093
  Port Vila
  Vanuatu

- Emailed to:
  breuben@ura.gov.vu

If the Authority receives a timely Notice of Grievance, it will conduct a review in accordance with Section 27 of the URA Act. If upon review the Authority determines that the grievance is justified, then it shall revoke, amend, or vary the decision on the matter complained of.

Appendix 1. Wintua and Lorlow Mini Grid Operating Procedures

Daily Operating Procedures

1. Operating Hours
    - Morning hours – 7:30am – 11.30am
    - Afternoon hours – 1:00pm – 5:00pm
2. Sales Revenues
    - Cash sales ONLY.
        i. Cash received prior to issuing pin for prepaid credit.
        ii. Record cash sales for electricity customer.
            1. Date
            2. Name of customer/meter number
            3. Amount (VATU) Paid
        iii. Other Revenues – Electrical Items
            1. Date
            2. Amount sold – Vatu
            3. Description of Electrical Item
            4. Total Sales

Monthly Operating Procedures

1. Financial Data

1.1. Monthly Revenue
- Monthly revenue earned from electricity (kWh) sales
- Monthly revenue earned from new connections, other works, or services
- Monthly revenue from the Lorlow/Wintua Fund
- Monthly revenue from Asset Recovery Collection

1.2. Monthly Expenses
- Monthly wage expenses
- Monthly diesel cost
- Monthly administration and maintenance costs

2. Technical Data

2.1 Monthly Gross Energy Generation Breakdown by Generation Type (in kWh):

- Monthly gross generation from Diesel (in kWh)
- Monthly litres on Diesel Oil utilized in generation (in litres)
- Monthly vatu spend on Diesel Oil utilized in generation (in litres)
- Monthly gross generation from Solar PV (in kWh)
- For any new generation source installed, the operator will report monthly data accordingly.

2.2 Monthly Number of Active Customers by Category:
- Public Customers (e.g., Government Institutions, Schools, Clinics) -(in number)
- Commercial Customers (e.g., Shops, Cooperatives) - (in number)
- Households - (in number)

2.3 Monthly kWh Billed per Customer Category:
- Public Customers (in kWh)
- Commercial Customers (in kWh)
- Households (in kWh)

Utilities Regulatory Authority

Vanuatu