GOUVERNEMENT DE LA REPUBLIQUE DU VANUATU

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GOVERNMENT OF THE REPUBLIC OF VANUATU

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Electricity Reliability Standards

Reliability Standards in relation to a regulated service

A major component of reliability standards is the baseline indices that give a measure of how effective and reliable the electricity service is. Quality standards are usually a measure of the power quality available to customers. Example of such measures would be the occurrence of voltage surges and sags and harmonics. The Authority may issue Reliability Standards that are to be used as guidelines by electricity utilities in Vanuatu.

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1. INTRODUCTION

1.1. Background

The Utilities Regulatory Authority (the Authority) is Vanuatu's economic regulator of electricity and water services throughout Vanuatu. The Government of Vanuatu established the Authority on 11 February 2008 under the *Utilities Regulatory Authority Act No. 11 of 2007* (the Act).

The Authority is responsible for the regulation of the electricity and water sectors. Our role differs in each regulated industry but generally involves regulating prices, service standards, and market conduct and consumer protection. We also investigate and advise the Government on regulatory matters that affect Vanuatu's regulated utilities.

The Act states that our primary objective is to regulate these utilities to ensure the provision of safe, reliable and affordable regulated services and maximize access to regulated services throughout Vanuatu.

1.2. Issue of Reliability Standards

In accordance with Division 2 – Safety standards, orders, inspection and reliability standards, section 17, the Authority may issue reliability standards in relation to the reliability of a regulated service throughout Vanuatu.

In determining whether to issue any reliability standard, the Authority must have regard to the cost and convenience of compliance with the reliability standard and the nature and importance of the reliability issue that is addressed.

The Electricity Reliability Standards are issued by the Authority as guidelines for electricity utilities to ensure that reliable electricity is generated and distributed to customers.

The Authority influences utilities reliability of supply through a financial incentive scheme, which encourages the utilities to meet and exceed the target levels of reliability.

Each Standard has specific performance requirements that must be met to manage reliability and quality issues effectively. A guideline is provided with each standard to assist regulated utilities in understanding and complying with the requirements.

A reliability standard issued by the Authority comes into force on the day on which it is published in the Gazette.

2. RESPONSIBILITIES

Generally, responsibilities for compliance with the Electricity Reliability Standards are:

- General Managers shall be accountable for ensuring the requirements of Standards are complied with;

- Managers and Supervisors shall be responsible for implementing the requirements of Standards; and

- Employees and Contractors shall comply with the requirements of Standards.

3. PERFORMANCE REQUIREMENT

The following general performance requirements apply to and form part of the Electricity Reliability Standards:

- Systems shall be established and maintained to effectively deal with instances of non-compliance with the requirements of the Electricity Reliability Standards, by applying corrective action to address the cause of the non-compliance.

- Corrective actions shall be considered, prioritized, recorded and tracked to completion with recorded evidence.

- Systems shall be established and maintained for the effective control of all documents that relate to the requirements of each Reliability Standards. This shall include formal review and authorization, identification, registration and revision control, ensuring that only the current version of documents is available to all personnel who need them and ensuring that superseded documents are withdrawn and are not used by personnel.

- Systems shall be established and maintained for the identification and maintenance of documentation and records, as required by legislation and in addition, sufficient to demonstrate compliance with such legislation and this Reliability Standard.

4. COMPLIANCE

The Electricity Reliability Standards may apply to all regulated utilities as defined in the Act, subject to the operational capacity of the utility as determined by the Authority.

5. RELIABITY AND QUALITY OF SUPPLY

This section of the Standard addresses:

- the reliability of supply and customer supply interruptions across the utility's supply areas throughout Vanuatu;
- the utility's performance requirements and reliability targets set within the Standards; and
- the quality of supply set within the Standards.

5.1. Reliability of Supply

Some interruptions – or outages – are inevitable, and customers cannot be guaranteed continuous supply. Planned outages occur when a utility needs to disconnect supply to undertake maintenance or construction works. The Reliability Standards requires that utilities give customers a minimum of 3 days' written notice of a planned outage. Year –on-year variance in planned minutes-off-supply is directly related to the maintenance and capital works activities undertaken by the Utility.

When the supply is disconnected unexpectedly, this is known as an unplanned outage. Unplanned outages typically have greater effect on customers than planned outages, because customers have no warning to take the necessary action to manage the impact of supply interruption.

The key measures for supply reliability are:

- minutes-off-supply, or the total minutes that a customer could expect to be without electricity over the reporting period;
- interruption frequency, or the number of times that a customer could expect to experience supply interruptions in a year;
- interruption duration, or the average time taken to restore supply to a customer when an interruption occurs; and
- momentary interruption frequency or the number of interruptions of less than 3 minutes that a customer could expect in a year.

5.2. Quality of Supply

As well as the reliability or availability of supply, the Authority is concerned with supply quality – namely, the technical characteristics of electrical energy as delivered. Customers should receive their supply at the nominal voltage (220/380) volts for most customers) and at a single fundamental frequency of 50 hertz. The key elements for assessing quality of supply are voltage variations and harmonic distortion.

5.2.1. Performance Monitoring

The Authority monitors the quality of electricity supply in Vanuatu through two sources;

- the level of customer complaints as reported by the Utilities; and
- the results of independent regulatory audits of Utilities.

6. Customer Service Standards

6.1. Obligation to serve

In accordance with various concession agreements, the Act and the Electricity Supply Act the utility must serve anyone that requests service on the condition adhere to the terms agreed upon by both the customer and the utility.

Delivery of electricity is to be ensured within one month of receipt of the application of supply. This period may be extended by a reasonable period of time necessary for carrying out the connection, the extension and possible upgrading of the network or generating facilities. Such periods of time shall be specified in the quotation submitted to the customer.

7. Offences

A breach of the standards may attract penalties under Part 4 Offences of the *Utilities Regulatory Authority Act No. 11 of 2007.*

Under section 21(1) (b) of the Act, a utility must not contravene any reliability standard. A person who commits an offence under this section is liable on conviction to a penalty set out under the Act.

The Authority may under section 25 of the Act, issue an infringement notice in respect of any single offence under Part 4 other than subsections 21(40 and (5).

Appendix A: - Customer-Service Standards

A1 – Connections

Item	Performance Measure	Units	Standard	Penalty (Vatu)
Connection to supply for connection points within 30 meters of the road frontage (when no network extension or the installation/upgrade of a transformer is required). If the Authority must approve a connection under any applicable regulation, the Performance Measure applies after it is approved.	i) Maximum time to connect a customer after the customer's payment has been received - when electricity supply and meter are already installed	Working Days	4	5000
	ii) Maximum time to connect a customer after the customer's payment has been received - when service drop and meter need to be installed	Working Days	10	5000
Connection to supply for connection points between 30 meters (when no network extension or the installation/upgrade of a transformer is required). If the Authority must approve a connection, the Performance Measure applies after it is approved.	i) Maximum time to provide works estimate	Working Days	10	5000
	ii) Maximum time to complete construction - after customer acceptance of estimate and payment	Working Days	20	5000
Disconnection of supply due to overdue payments	Minimum notification given prior to disconnection. Notification includes a widespread reminder in the media, so long as notice of the disconnection period is given on the previous bill.	Working Days	5	2000

Item	Performance Measure	Units	Standard	Penalty (Vatu)
Reconnection after payment of overdue amounts and reconnection fee (note that reconnection fee must be received before 2pm or time begins from 2pm the following working day). If a connection permit is required from the Authority under any applicable regulation then time begins once the permit is approved.	Maximum time to restore supply after payment is made:			
	i) Urban areas	Working Days	1	2500
	ii) Rural areas	Working Days	2	2500

A2 - Customer Service and Billings Standards

Item	Performance Measure	Units	Standard	Penalty (Vatu)
Billing punctuality	Maximum time for first bill to be delivered after service connection	Calendar Days	60	1000
Billing period	Maximum time between bills	Calendar Days	45	1000
Response to customers' enquiries and complaints. Response is the first action taken by the utility in addressing the customer enquiry or complaint.	Maximum time to respond to a customer's enquiries and complaints.	Working Days	5	2000

A3 - Continuity of Supply

Item	Performance Measure	Units	Standard	Penalty (Vatu)
Temporary disconnection of supply for maintenance or other works	Minimum notification prior to disconnection. Notification must include a minimum of four advertisements in widespread media, including one advert in the day prior to the shutdown.	Advertisements Working Days	4 First advertisement – 5 Working Days Second advertisement – 1 Working Day	2000 2000
Temporary disconnection of supply throughout the network without justification	Maximum time to restore supply to all affected customers	Minutes	3	500 *P per hour of interruption
Temporary disconnection of supply at one transformer without justification	Maximum time to restore supply to all affected customers	Minutes	3	50*P per transformer per hour of interruption
Response to emergency and service calls (single events affecting the distribution system), other than where more than 5 Customers are affected	Maximum time to restore supply to all affected customers	Working Days	2	2500

A4 – Testing of voltage stability

Item	Performance Measure	Units	Standard	Penalty (Vatu)
Responding to a request by Customer under clause 2.8(a) relating to voltage fluctuations	Maximum period to complete a spot check of the Customer's voltage after a Customer request	Working Days	5	2000
	Following a Customer request, maximum time to complete voltage sampling for at least 24 hours	Working Days	10	2000
Customer-specific Voltage stability (tested in response to request by a Customer under clause 2.8(a))	Voltage to be measured at the demarcation point. In respect of each sample, fluctuations in long duration voltage (greater than 60 seconds) outside of a nominal voltage of 220/380 volts, in urban areas only. The voltage standard relates to the demarcation point between network and the customer installation which is at the point of entry to the customer's building unless otherwise agreed.	%	+/-10%	2000

Appendix B - Overall Standards

B1 - Customer Service and Billings Standards

Item	Performance Measure	Units	Standard
Number of complaints to the service provider	Total telephone and written complaints per 1,000 customers per annum	Number	Report
Customer invoices	Invoices must be consistent with provisions stated in any contractual agreement between the customer and utility	Number	Report

B2 – Electricity Quality and Reliability

Item	Performance Measure	Units	Standard
Voltage fluctuations are to be tested in the following ways: (a) *Sampling of High-Voltage Lines* Voltage is to be measured by quarterly sampling (for a period of one week) of each of the available phases of voltage. Measurements must be taken at the first distribution transformer from the power station on each feeder (or at the power station where applicable) and at the last (electrically most remote) distribution transformer from the power station on each feeder. One of the quarterly samples must be taken during the month that peak load is expected to occur in, and one of the quarterly samples must be taken during the month that the lowest load is expected to occur in.	In respect of each sample, fluctuations in long duration voltage (greater than 60 seconds) outside of a nominal voltage of 230 volts, in urban areas only. The voltage standard relates to the demarcation point between network and the customer installation which is at the point of entry to the customer's building unless otherwise agreed.	%	+/- 10%

Item	Performance Measure	Units	Standard
(b) *Sampling of CT metered installations* Voltage is to be measured by annual sampling (for a period of at least 24 hours) at the demarcation point of each CT metered installation. Reasonable endeavors should be taken to sample each CT meter at a time that its peak load is expected to occur in.	In respect of each sample, fluctuations in long duration voltage (greater than 60 seconds) outside of a nominal voltage of 230 volts, in urban areas only. The voltage standard relates to the demarcation point between network and the customer installation which is at the point of entry to the customer's building unless otherwise agreed.	%	+/- 10%
Frequency Stability	Maximum deviation from nominal frequency of 50 Hertz, as measured at the Concessionaire's relevant power station	%	+/- 2%

Appendix C - Metering Reporting Standards

Item	Performance Measure	Units	Standard
Frequency of meter testing	Report on the percentage of Customers' meters that are tested for accuracy or replaced annually	%	Report

Appendix D – Definition of Interruptions

Measure	Index	Description
Average minutes-off-Supply per customer	System Average Interruption Duration Index (SAIDI)	The average total minutes that a customer could expect to be without electricity over a specific period. Total SAIDI comprises both planned and unplanned minutes-off-supply. ***SAIDI*** *is calculated as the sum of the duration of each customer interruption (in minutes), divided by the total number of connected customers averaged over the year.*
Average number of interruptions per customer	System Average Interruption Frequency Index **(SAIFI)**	The average number of occasions per year when each customer could expect to experience an unplanned interruption. ***SAIFI*** *is calculated as the total number of customer interruptions divided by the total number of connected customers averaged over the year.* *Unless otherwise stated, SAIFI excludes momentary interruptions (less than three minute duration).*
Average Interruption duration (minutes per interruption)	Customer Average Interruption Duration Index **(CAIDI)**	The average time taken for supply to be restored to a customer when an unplanned interruption has occurred. ***CAIDI*** *is calculated as the sum of the duration of each customer interruption (in minutes), divided by the total number of customer interruptions (SAIDI divided by SAIFI).* *Unless otherwise stated, CAIDI excludes momentary interruptions (less than three minute duration).*
Average number of momentary interruptions per customer	Momentary Average Interruption Frequency Index **(MAIFI)**	The average total number of momentary interruptions (less than one minute duration) that a customer could expect to experience in a year. ***MAIFI*** *is calculated as the total number of customer interruptions of less than one minute duration divided by the total number of connected customers averaged over the year.*

Appendix E - Definitions

Consultation: shall mean the timely exchange of relevant information and ideas in such a manner that the parties have the actual and genuine opportunity to influence the outcome.

Currency: The state of being current, up-to-date and relevant to the present time and conditions.

De-energised (Dead): Separated from all sources of supply but not necessarily isolated, earthed or out of commission.

Discharge: The removal of an electric charge by the application of a suitable discharge device.

Disconnected: Physically separated from any source of electrical energy, insulated where necessary and secured in a position clear of any electrical equipment that is capable of being energised.

External Parties: include service providers, government agencies, other organisations, neighbours and community and public.

Fault Finding: The process of making measurements or carrying out tests on equipment to locate faults. It may also include the process of connecting testing instruments or devices to various parts of the equipment to determine how the equipment is operating.

Harmonic Distortion: Deviation from the pure 50 hertz electrical power sine-wave waveform; mainly caused by customers' electronic equipment and large industrial motors. The Reliability Standards specifies limits for the percentages of harmonic distortion allowed at different points in the network.

Life Cycle: extends from specification, design, procurement, installation, construction, commissioning, modification, operation, inspection, and maintenance, decommissioning through to disposal.

Regulated Service: As defined in the *Utilities Regulatory Authority Act No.11 of 2007*.

Reporting Period: The period commencing 1 January through to 31 December inclusive in any given year.

Testing: The use of logical methodology or test instruments or test equipment by a competent person.

Utility: As defined in the *Utilities Regulatory Authority Act No.11 of 2007*.

Voltage Variations: Short term variations from the desired nominal voltage, caused by events such as lightning strikes and faults in customers' installations or elsewhere on the network, or by inadequate supply capacity. The Reliability Standards specifies different voltage limits within which the voltage may vary up or down, and time limits within which the variation may persist.

Works: Of electricity utility, means the electrical equipment, and electric line associated equipment, controlled or operated by the utility to generate, transform, transmit, distribute or supply electricity.

Appendix F- References

Relevant Acts, Regulations, Codes and Orders

- Electricity Cable Act
- Utilities Regulatory Authority Act No. 11 of 2007.
- Electricity Supply Act
- Port Vila Electrical Supply Act
- Supply of Electricity (Districts) Act

Utilities Regulatory Authority Policies and Procedures

- Utilities Regulatory Authority Charter of Consultation and Regulatory Practice
- Utilities Regulatory Authority Risk Management Policy and Procedure

Concession Agreements

- Convention relating to the Concession for the Generation and Public Supply of Electric Power in Port Vila.
- Amendment No.1 to the Convention dated 15th August 1986 relating to the Concession for the generation and Public Supply of Electric Power in Port Vila.
- Amendment No.2 to the Convention dated 15th August 1986 relating to the Concession for the generation and Public Supply of Electric Power in Port Vila.
- Agreement varying Concession between the Government of the Republic of Vanuatu and the Honorable Minister of Lands, Geology, Mines, Energy and Rural Water Supply and Union Electrique du Vanuatu Limited.
- Specifications relating to the Concession for the Generation and Public Supply of Electric Power in Port Vila.
- Convention relating to the Concession for the Generation and Public Supply of Electric Power in Luganville.
- Specifications relating to the Concession for the Generation and Public Supply of Electrics Power in Luganville.
- Addendum to the Contract of Concession for the Generation and Public Supply of Electric Power in Luganville between the Government of Vanuatu and Union Electrique du Vanuatu Limited.

- Further Addendum to the Contract of Concession for the Generation and Public Supply of Electric Power in Luganville between the Government of Vanuatu and Union Electrique du Vanuatu Limited relating to the Sarakata Hydroelectric Power Station – Release of Funds from Sarakata Renewal Fund for Land Lease Acquisition Purposes.

- Addendum to the Contract of Concession for the Generation and Public Supply of Electric Power in Luganville between the Government of Vanuatu and UNELCO Vanuatu Limited Relating to the Handing over of the Sarakata Hydroelectric Power Station.

- Concession contract for the Generation and Public Supply of Electric Power in Tanna Island, Vanuatu.

- Concession contract for the Generation and Public Supply of Electric Power in Malekula Island, Vanuatu.

Other related documents

Nil

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You can access the Electricity Reliability Standards by referring to our website www.ura.gov.vu, contacting us by telephone (+678) 23335, fax (+678) 2308, email: rmarum@vanuatu.gov.vu or writing to us at the Office of Utilities Regulatory Authority, PMB 9093 Port Vila, Vanuatu.