Network Standard

Document No.
NS 291

Title:
Stand Alone Power Systems

Approved Date	9/06/2023	Revision		0	
Lifecycle Stage	Operate	Internal Use	☒	External Use	☒
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Revision

No	Date	Description	Technical Approver	Authorised By
0	20/06/2023	Initial issue	Nathan Laird	Matt Webb

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Scope

This Network Standard sets out the minimum requirements for the quality of supply for a regulated Stand Alone Power System (SAPS). This does not cover the design requirements for SAPS which are done to meet the unique site and load requirements.

Reference Documents

All work covered in this document shall conform to all relevant Legislation, Standards, Codes of Practice and Network Standards.

Ausgrid Documents

NS238 Supply Quality

Other Standards and Documents

Ausgrid's Distributor's Licence under the Electricity Supply Act 1995 (NSW)

ENA DOC 046-2021 National Guidelines for Distribution Network Service Provider-led Stand-Alone Power Systems

ENA Customer Guide to Electricity Supply

AS/NZS 4509.1:2009 Stand-Alone Power Systems

Clause-Standard Requirements

1 Frequency

1.1 The nominal frequency of the supply of electricity from a regulated SAPS shall be 50 Hz.

1.2 Under normal conditions, the frequency shall be maintained between 48 Hz and 52 Hz. Deviations outside this band shall be kept below 10 seconds. Refer to Table 1.

1.3 Where the power system has experienced a contingency event involving the failure or removal from service of a generating unit, a load or distribution element, the frequency shall be kept between 47 Hz and 55 Hz. Deviations outside this band shall be kept below 5 seconds. Refer to Table 1.

1.4 Following a contingency event where supply is not interrupted, the frequency shall return to the normal frequency range within 10 minutes.

Table 1 Frequency requirements

Condition	Containment	Recovery
Normal	48 Hz to 52 Hz	10 seconds
Contingency event	47 Hz to 55 Hz	5 seconds

2 Reliability

2.1 Low voltage

2.1.1 Low-voltage SAPS shall achieve the 12-month rolling reliability standards required by Ausgrid's Distributor's Licence. The reliability standards for low-voltage SAPS as at the date of publication of this standard are shown in Table 2.

Table 2 Low-voltage SAPS reliability standards

Reliability Metric	Standard
SAIDI	1817 minutes
SAIFI	9.4

2.2 High voltage

2.2.1 High-voltage SAPS (which under Ausgrid's Distributor's Licence are any SAPS that are not defined as low-voltage SAPS and have an HV feeder) shall achieve the 12-month rolling reliability standards required by Ausgrid's Distributor's Licence. The reliability standards for high-voltage SAPS as at the date of publication of this standard are shown in Table 3 and Table 4.

2.2.2 Until July 2024 the feeder category is determined by assessing the load density by calculating the maximum demand over the reporting period per total feeder route length. It is assumed that no SAPS will be classified as CBD or Long Rural (longer than 200km).

Table 3 - High-voltage SAPS reliability standards before July 2024

Feeder category	Reliability Metric	Standard
Urban >0.3MVA/km	**SAIDI**	350 minutes
	SAIFI	4
Short Rural ≤0.3MVA/km	**SAIDI**	1000 minutes
	SAIFI	8

2.2.3 From July 2024, the feeder category standards for Urban and Short Rural will be replaced by feeder specific targets defined by the formulae in Table 4.

Table 4 - High-voltage SAPS reliability standards after July 2024

Reliability Metric	Standard
SAIDI	$262 + 108 \times \sqrt{Length} + \min(160, \frac{5500}{Length})$
SAIFI	$3.1 + 0.44 \times \sqrt{Length} + \min(0.65, \frac{21}{Length})$

3 Voltage

3.1 SAPS shall comply with the steady-state supply voltage ranges specified in NS238.

4 System Stability

4.1 SAPS shall comply with the voltage sag and transient voltage disturbance requirements specified in NS238.