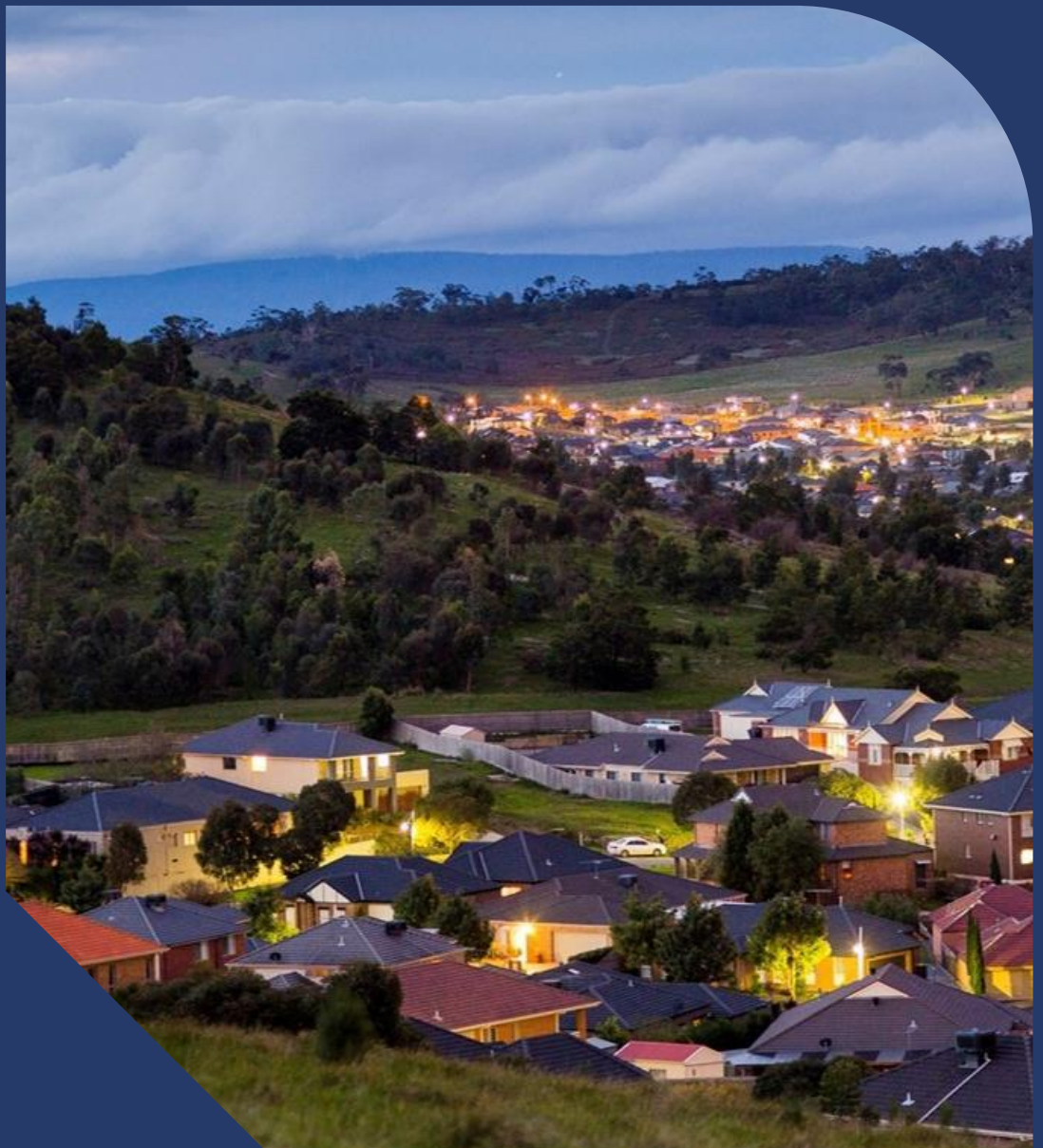


AusNet

Network Performance Monitoring

Asset Management Strategy – Electricity
Transmission Network



Document number: AMS 10-17

Issue number: 11

Status: Draft

Approver: Stuart Dick

Date of approval: 01/10/2025



Table of Contents

Abbreviations and definitions	1
1. Introduction	2
2. Objectives	3
3. Regulatory Requirements	4
4. AER Service Target Performance Incentive Scheme	5
4.1. STPIS – Service Component	5
4.2. STPIS – Market Impact Component	6
4.3. STPIS – Network Capability Component	7
5. System Incident Reporting (SIR)	8
5.1. Measures	8
5.2. Systems	8
5.3. Strategies	8
6. Serious Electrical Incidents	9
6.1. Measures	9
6.2. Systems	9
6.3. Strategies	9
7. Plant Performance Indicators	10
7.1. Measure	10
7.2. Systems	10
7.3. Strategies	10
8. Schedule of Revisions	11

Abbreviations and definitions

TERM	DEFINITION
EHV	Extra High Voltage
KPI	Key Performance Indicators
AER	Australian Energy Regulator
AEMO	Australian Energy Market Operator
ESV	Energy Safe Victoria
SC	Service Component
NCC	Network Capability Component
MIC	Market Impact Component
NER	National Electricity Rules
SAP	AusNet's enterprise resource planning (ERP) tool, also used for Asset Management
NEO	National Electricity Objective
NCIPAP	Network Capability Incentive Parameter Action Plan
TNSP	Transmission Network Service Provider
STPIS	Service Target Performance Incentive Scheme
SIR	System Incident Report
CEOT	Customer Energy and Operations Team
MEC	Major Electricity Company
SCADA	Supervisory control and data acquisition

1. Introduction

The effectiveness of AusNet's asset management practices is measured by the performance of extra high voltage (EHV) network elements and their impact on the availability and reliability of the Victorian electricity transmission network in which they operate.

The development of these practices requires the reliable capture of accurate information and data, effective analysis and trending and robust decision support tools.

Additional comparisons with the Key Performance Indicators (KPIs) set by the Australian Energy Regulator (AER), Australian Energy Market Operator (AEMO), Energy Safe Victoria (ESV) and comparisons with externally benchmarked performance standards guide the adjustment of practices.

2. Objectives

The main objectives of network performance management are to:

- (1) Monitor, record and accurately report the performance of the transmission network.
- (2) Report performance as per the requirements of the AER and ESV.
- (3) Report Reviewable Power System Operating Incidents as per the requirements of AEMO.
- (4) Provide support to the Transmission business units by reporting trends in plant and equipment performance to enable corrective action to be taken in a timely manner.
- (5) Share learnings from incident root cause analysis with relevant business units, and implement follow-up actions to prevent repetitive incidents and continuously improve performance management processes.

3. Regulatory Requirements

On 5 April 2024, the AER made Annual Information Orders applying to the period from 2024-25 to 2027-28 that set out information requirements for electricity networks. This superseded the information requirements previously set out in the AER's Information Guideline. The Orders require AusNet to provide service performance data as detailed in "Workbook 05 – Service Performance" on an annual basis.

As per these regulatory requirements, AusNet is required to monitor and report the service performance on the Service Target Performance Incentive Scheme (STPIS) which includes:

- Service Component (SC)
- Network Capability Component (NCC); and
- Market Impact Component (MIC).

Pursuant to the Section 142 of the Electricity Safety Act 1998 and Section 27 of the Electricity Safety (Management) Regulations 2019, AusNet is required to report all serious electrical incidents to ESV.

As per under clause 4.8.15 of the NER, AEMO is required to review, prepare and publish reports for certain reviewable operating incidents. Under clause 4.8.15(f) of the NER, AEMO would then send requests to AusNet for information pertaining to those reviewable operating incidents.

The relevant versions of the STPIS that applies to AusNet Services during the 2022-27 regulatory control period is Versions 5. During the 2027-32 regulatory period Version 6 will apply.

4. AER Service Target Performance Incentive Scheme

4.1. STPIS – Service Component

4.1.1. Measures

The Service Component of the AER's STPIS for the current regulatory period is a symmetrical reward and penalty scheme which, depending on performance, adjusts future revenues up to a cap of approximately \$7.9 million per annum.

The AER determines the revenues received by transmission network service providers (TNSPs) in respect of prescribed transmission services under chapter 6A of the National Electricity Rules. Accordingly, the Final Decision on AusNet's transmission determination dated January 2022 is the AER's decision applicable to AusNet's allowable revenue for the regulatory period between 1 April 2022 and 31 March 2027.

In addition to the maximum allowable revenue as approved by the AER in its transmission determination, there is an opportunity for AusNet to improve its profits by reducing costs. Such cost reductions may result from either CAPEX or OPEX efficiency gains, or by the effective deferral or reduction of either form of expenditure.

As the latter may result in a decline in the level of service and impose costs on other market participants, the STPIS, or the transmission 'S' factor scheme, was developed in accordance with the NER which aims to balance the incentive for TNSPs to minimise expenditure with the need to maintain and improve reliability for customers, by providing TNSPs with a financial incentive to maintain or improve service levels.

AusNet's Maximum Allowable Revenue (MAR) for application of the STPIS in 2025 is approximately \$635 million¹ and the annual reward/penalty under the Service Component is +/- 1.25% of the MAR i.e. +/- \$7.9 million which is a spread of approximately \$15.9 million.

The Service Component measures applicable to AusNet in CY25 are shown in Table 1:

Table 1: AusNet's Service Component measures and weightings

Parameter	Floor	Target	Cap	Weighting (% of MAR)
Unplanned outage circuit event rate (%)				0.75
Line outage – fault	23.37	17.09	12.43	0.20
Transformer outage – fault	18.80	11.97	6.49	0.20
Reactive plant – fault	30.43	20.67	14.90	0.10
Line outage – forced	20.74	10.14	3.82	0.10
Transformer outage – forced	15.88	11.97	7.54	0.10
Reactive plant – forced	34.66	27.78	19.65	0.05
Loss of supply event frequency				0.30
>0.05 system minutes	4	1	0	0.15
>0.3 system minutes	2	1	0	0.15
Average outage duration				0.20

¹ \$635M represents calendar year revenue for 2025, provided in AusNet Services' CY2025 transmission STPIS compliance review template

Average outage duration (mins)	87.20	45.60	10.20	0.20
Proper operation of equipment				0.00
Failure of protection system	40.00	31.00	22.00	0.0
Material failure of SCADA	3.00	1.00	0.00	0.0
Incorrect Operational isolation	11.00	6.00	3.00	0.0

Performance against the above mentioned KPIs for each calendar year of the regulatory period is submitted to the AER for its annual audit by 1 February in the following year. AusNet's performance incentive is calculated as explained in the applicable AER STPIS publication.

4.1.2. System

AusNet's asset management system (SAP) is utilised to determine the network performance against the KPIs. SAP data is used in determining AusNet's asset management strategies/ policies. Information recorded in SAP is also used to prepare reports for internal circulation and for submission to the relevant external authorities.

4.1.3. Strategies

It is proposed to continue to use SAP system to capture outage data to monitor network performance.

4.2. STPIS – Market Impact Component

4.2.1. Measures

In addition to the STPIS – Service Component, a Market Impact Component (MIC) of the AER STPIS has applied since 1 August 2011.

The objective of this component is to promote efficient outcomes in the National Electricity Market (NEM) by rewarding TNSPs when their actions cause fewer price differentials in the market than their historic performance. AusNet is obligated to report on the AER's measure of market congestion, the MIC due to AusNet's activities.

Performance is measured based on the number of five-minute dispatch intervals when an outage of a TNSP's network results in a network outage constraint binding with a marginal value greater than \$10/MWh.

The MIC is a symmetrical scheme with revenue at risk of +/- 1% of MAR (around +/- \$6.35 million). For the current period the target of 1,525 dispatch intervals is based on average performance of the median five years from 2014-2020 (i.e. the lowest and highest values are excluded from the average calculation) and was calculated in accordance with the requirements of clause 4.2(f) in version 5 of the STPIS.

The performance cap and floor are zero and 3,050 (i.e. twice the target) dispatch intervals, respectively.

4.2.2. Systems

Outage constraints are monitored on an ongoing basis, and binding dispatch intervals are assigned a cause and an exclusion if relevant via a package called "Ez2view" provided by Global Roam. Reports are generated from this package.

AusNet also subscribes to "NEO express" provided by Intelligent Energy Systems (IES) as a back-up and for event analysis and modelling.

4.2.3. Strategies

We note that the MIC has been suspended in Version 6 of the STPIS, which will apply for AusNet's 2027-32 regulatory control period. Despite this, AusNet continues to take actions to optimise our market impact, including:

- Real time monitoring of the National Electricity Market, trading systems to allow deferring or, recalling of outages at short notice depending on market outcomes.
- Alarms for binding or forecast binding dispatch intervals.
- Recording of outage impacts for AER reports.
- An in-house information server was built to reliably analyse and monitor market information.
- Capture lessons learned for binding outages for improve outage planning.

4.3. STPIS – Network Capability Component

4.3.1. Measures

The Network Capability Component (NCC) of the AER STIPS scheme provides incentives to deliver low cost, one-off projects that increase network capability and deliver value for money to customers. Each TNSP is required to submit, as part of its revenue proposal, a Network Capability Incentive Parameter Action Plan (NCIPAP). The TNSP must consult AEMO in developing the NCIPAP.

In Victoria, the involvement of AEMO is more substantial – as the planner of the Victorian transmission network it is responsible for identifying and scoping projects and working with AusNet to quantify project benefits. This is because under the Victorian planning arrangements, AusNet's ability to identify the limit for each transmission circuit or load injection point is limited by access to data and tools which are accessible to AEMO.

4.3.2. Systems

As part of the development of the first NCIPAP, AusNet and AEMO undertook an exercise to identify the reason for the limit for every transmission circuit and injection point on AusNet's transmission network.

Each limit was then assessed to determine whether the limit could be increased through operating or minor capital expenditure and whether this would result in wholesale market benefits or increased capability at times when network users place greatest value on the reliability of the transmission system.

No new NCC projects have been identified for the 2027-32 period.

4.3.3. Strategies

The transformation of the generation mixes and the resulting changes in power flows are continuously revealing new network limitations which provide possibilities for NCC projects. AusNet's strategy is to leverage the many industry studies that are being produced by AEMO, Australian Energy Market Commission (AEMC), Energy Security Board (ESB) and other industry bodies to identify minor projects that fit the NCC criteria.

5. System Incident Reporting (SIR)

5.1. Measures

Victorian electricity transmission network performance is dependent on the availability of its transmission network elements which collectively provide shared network asset services to its connected parties such as generators, distribution businesses and EHV customers via AEMO.

Moreover, AEMO's system security needs are largely dependent on planned outages within Victorian electricity transmission network and contingencies arising from unplanned outages occurring on the network elements.

A System Incident Report (SIR) is created by Customer Energy and Operations Team (CEOT) in SAP as a ZL notification for any unplanned outage of a primary plant element or a critical alarm condition within the Victorian electricity transmission network including the AusNet owned transmission network. [TOC10-21](#) TOC Incident Reporting Procedure outlines the procedure for reporting system incidents and defective apparatus.

The SIR record thus created by CEOT is forwarded to the Transmission Network Management Team for further investigations and analysis and finalising its technical report. The final version of the SIR is recorded in SAP and sent out to internal and affected external stakeholders when necessary.

5.2. Systems

AusNet utilises the SAP system to provide a versatile platform for recording, analysing and reporting of system incidents

5.3. Strategies

AusNet's strategy is to utilise the data for reporting purposes based on the recorded System Incident (ZL) notifications in SAP.

6. Serious Electrical Incidents

6.1. Measures

In relation to serious electrical incidents, AusNet is required to report to ESV measures including fatal and serious injuries (due to electrical causes) to (Major Electricity Company (MEC) workers or the public and electrical shocks from MEC assets. The timing of the reporting is defined by ESV and depends on the relative seriousness of the incident.

The Electricity Safety Management Scheme (ESMS) for the Victorian electricity transmission network specifies the requirements for reporting all serious, non-serious and "other" specified electrical incidents to ESV. ESMS 10-01 describes the process for monitoring electrical incident Key Performance Indicators and the process for implementation of improved safety outcomes.

Electrical incidents are reported to ESV in accordance with ESV's document "Incident and Safety Performance Reporting Guidelines".

ESV carries out an annual audit of AusNet's bushfire mitigation plan and several audits each year on the various regulations contained within the Electricity Safety (Management) Regulations, in order to verify compliance.

6.2. Systems

Information on serious electrical incidents arising from the transmission network is recorded in AusNet Issues Management System, Enablon, and reports are derived from this system as required.

The Enablon system is an intranet-based system that supports five sub-systems (Incidents, Actions, Complaints, Claims and Corrective action) all related to the management of issues and incidents across AusNet and its workforce partners.

Once an incident is reported to the CEOT, and recorded in the Enablon, it generates the initial report and facilitates the process of routing the incident to relevant stakeholders for investigation, review, approval, corrective actions where applicable, and subsequently prepares the final detailed report to be sent to both internal stakeholders and ESV.

6.3. Strategies

The current issues management system is working satisfactorily with no enhancements planned.

7. Plant Performance Indicators

7.1. Measure

The network performance indicators are a measure of network performance at a macro level. As a result of this, the performance indicators that make up these measures are not enough to help AusNet monitor the performance of specific plant types at a micro level.

Network design is also a factor that can mask individual plant type performance. For example, the unavailability of a specific plant item may not necessarily result in the outage of a transmission element. This results in the outage of individual type of plant items not being captured in scheme that measures network performance.

Since asset management strategies and practices focus on specific plant types rather than transmission elements, monitoring the performance of individual plant categories is a valuable early warning tool. It is also a more sensitive indication of performance degradation, providing information before it is reflected in the higher-level measures.

Performance measures need to be supplemented with indicators that monitor the performance of specific plant items of individual types.

All major plant failures; that is, failures that require major part replacement or repair, and corrective maintenance of defects are investigated for a root cause. All unscheduled work orders for corrective maintenance activities are coded with an object damage and cause. In depth analysis is performed on this data on circuit breakers and reported in Plant Condition reports (asset health documents) and on other plant items for strategy formulation. The information is used in assessing a health score for each equipment which is used in the development of appropriate detailed plant strategies.

7.2. Systems

Information on plant failures and defects arising from the transmission network are recorded in the AusNet Enterprise Asset Management system SAP that allow a versatile platform for recording, analysing and reporting

7.3. Strategies

The following are key improvements for the Plant Performance Indicators:

- Continue to track, investigate, and report major equipment failures and explosive plant failures
- Continue to track and report Protection operation performance
- Target Improvements in completion and the accuracy of coding corrective maintenance - Object Damage Cause coding.
- Target increased digitisation and analysis of condition and performance data, collected during preventative maintenance

8. Schedule of Revisions

Issue	Date	Revision Description	Reviewed By	Approved By
5		Editorial review.		G. Towns
6		Review and update.		G. Towns
7		Editorial review.		G. Towns
8		Review and update.		D. Postlethwaite
9		Review and Update.		J. Dyer
10		Updated Strategies and Systems of each STPIS component, including Network Capability Component. Updated Plant Performance Indicator, System Incident Reporting and Serious Electrical Incidents Systems and Strategies. Removed AER Benchmarking	A Dickson	P. Ascione
11	01/10/2025	Editorial review	Akila Ranatunga Khai Ling Chan Daniel Ghantous	Stuart Dick

Disclaimer

This template is for generating internal and external document belonging to AusNet and may or may not contain all available information on the subject matter this document purports to address.

The information contained in this document is subject to review and AusNet may amend this document at any time. Amendments will be indicated in the Amendment Table, but AusNet does not undertake to keep this document up to date.

To the maximum extent permitted by law, AusNet makes no representation or warranty (express or implied) as to the accuracy, reliability, or completeness of the information contained in this document, or its suitability for any intended purpose. AusNet (which, for the purposes of this disclaimer, includes all of its related bodies corporate, its officers, employees, contractors, agents and consultants, and those of its related bodies corporate) shall have no liability for any loss or damage (be it direct or indirect, including liability by reason of negligence or negligent misstatement) for any statements, opinions, information or matter (expressed or implied) arising out of, contained in, or derived from, or for any omissions from, the information in this document.

Contact

This document is the responsibility of Transmission - Network Management Division of AusNet. Please contact the indicated owner of the document with any inquiries.

Akila Ranatunga

AusNet Services

Level 31, 2 Southbank Boulevard

Melbourne Victoria 3006

Ph: (03) 9695 6000

AusNet

Level 31
2 Southbank Boulevard
Southbank VIC 3006
T +613 9695 6000
F +613 9695 6666
Locked Bag 14051 Melbourne City Mail Centre Melbourne VIC 8001
www.AusNetservices.com.au

Follow us on



@AusNetServices



@AusNetServices



@AusNet.Services.Energy

AusNet

