Willogoleche Wind Turbines

Attachment 10

Service Target Performance Incentive Scheme

Revenue Proposal 2023-24 to 2027-28

31 JANUARY 2022

ElectraNet

Company Information

ElectraNet Pty Ltd (ElectraNet) is the principal electricity transmission network service provider (TNSP) in South Australia.

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Note

This attachment forms part of our Revenue Proposal for the 2023-24 to 2027-28 regulatory period. It should be read in conjunction with the other parts of the Revenue Proposal.

Our Revenue Proposal comprises the overview and attachments listed below, and the supporting documents that are listed in Attachment 14:

- Revenue Proposal Overview
- Attachment 1 – Maximum allowed revenue
- Attachment 2 – Regulatory asset base
- Attachment 3 – Rate of return
- Attachment 4 – Regulatory depreciation
- Attachment 5 – Capital expenditure
- Attachment 6 – Operating expenditure
- Attachment 7 – Corporate income tax
- Attachment 8 – Efficiency benefit sharing scheme
- Attachment 9 – Capital expenditure sharing scheme
- Attachment 10 – Service target performance incentive scheme (this document)
- Attachment 11 – Pricing methodology
- Attachment 12 – Pass through events
- Attachment 13 – Demand Management Innovation Allowance
- Attachment 14 – List of supporting documents

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10. Service Target Performance Incentive Scheme

10.1 Key points

- We have proposed parameter values in accordance with version 5 of the Service Target Performance Incentive Scheme (STPIS) which provides incentives to maintain or improve network operational performance.
- Our recent service performance has varied across the different parameters, which is to be expected given the impact of weather and other events on actual performance. For a number of measures, however, we have delivered improved performance during the current period.
- Our targets for the forthcoming regulatory period are based on our latest historical performance, being 2016-2020. We propose to update our targets at the Revised Revenue Proposal stage, once our 2021 performance data becomes available.

10.2 Introduction

This attachment sets out our proposed application of the STPIS for the 2023-24 to 2027-28 regulatory period. The STPIS plays an important role in counter-balancing the incentives to minimise operating and capital expenditure that are provided by other aspects of the regulatory framework. In broad terms, it gives us incentives to maintain and improve network reliability and performance.

The STPIS consists of three components:

1. a service component, which provides incentives to improve network reliability, as measured by four main parameters and various sub-parameters acting as key indicators;
2. a market impact component, which provides incentives to minimise the impact of network outages on the wholesale electricity market; and
3. a network capability component, which provides incentives to undertake low cost projects to enhance network capability for the benefit of customers.

Each year, our Maximum Allowed Revenue (MAR) is adjusted based on our performance against the STPIS parameters in the previous calendar year. Version 5 of the STPIS currently applies to us. It specifies a maximum incentive payment of +/-1.25% of MAR in relation to the service component of the scheme and +/-1% of MAR in relation to the market impact component.

In its Framework and Approach paper, the AER concluded that STPIS version 5 will continue to apply for the 2023-24 to 2027-28 regulatory period. Therefore, we are required to submit:

- proposed values for the service component parameters;
- data for the market impact component for the preceding seven regulatory years and proposed parameter values for:
  - the performance target;
  - the unplanned outage event limit; and
  - the dollar per dispatch interval incentive rate; and
- a Network Capability Incentive Parameter Action Plan (NCIPAP) containing proposed priority projects.

Those proposed values and data are in this attachment. The proposed values comply with the requirements of STPIS clauses 3.2, 4.2 and 5.2 respectively.

Clause 3.2(f) of the STPIS requires (subject to certain exceptions) that our proposed target for each performance measure must be our average actual performance over the most recent five year period. The data used to calculate the performance target must also be consistently recorded, in accordance with the scheme's parameter definitions.

Consistent with these requirements, we propose to use our performance data for the period 2017 to 2021 for target setting purposes. The current proposed targets, which are based on the latest available data, being 2016 to 2020, will be updated at the Revised Proposal stage when the 2021 data will be available. The data are consistent with the parameter definitions set out in the STPIS.

Clause 3.2(e) of the STPIS states that the proposed floors and caps for each performance measure must be calculated using a sound methodology. In accordance with this requirement, we have calculated floors and caps that reflect the 5th and 95th percentiles using the statistical distributions set out in Table 10.2 of this attachment.

The remainder of this attachment is structured as follows:

- Section 10.3 sets out our proposed parameter values in relation to the service component;
- Section 10.4 sets out our proposed parameter values for the market impact component;
- Section 10.5 summarises our priority projects which form the network capability component of the STPIS; and
- Attachment A sets out our Network Capability Incentive Parameter Action Plan (NCIPAP).

10.3 Service component

In accordance with the STPIS, our performance will be assessed against the following parameters:

1. Unplanned outage circuit event rate (fault and forced);
2. Loss of supply event frequency;
3. Average outage duration; and
4. Proper operation of equipment.

Below, we explain each of these parameters and their sub-parameters and present our historical performance and proposed targets for the 2023-24 to 2027-28 regulatory period. In the later sections, we provide further details on the probability distribution functions and the proposed parameters for the service component.

The derivation of these probability distributions and calculation of the corresponding target values has been supported by independent advice from ACIL Allen Consulting. A copy of its report accompanies this Revenue Proposal[1].

[1] Refer ENET030 ACIL Allen report

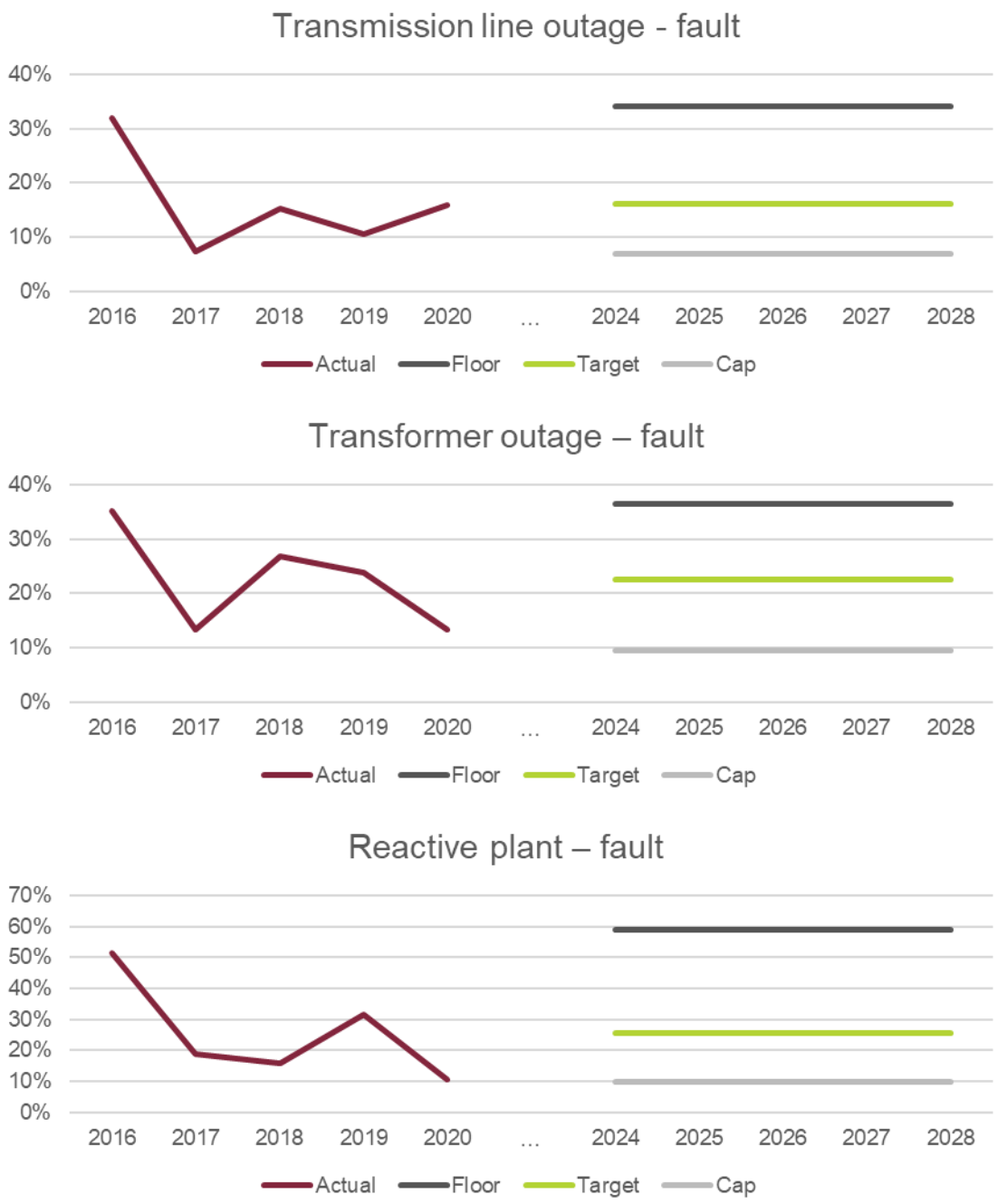
10.3.1 Unplanned outage circuit event rate – fault

An unplanned outage circuit event – fault, is commonly referred to as a fault outage. It is any element outage that occurred because of unexpected automatic operation of switching devices such as circuit breakers. Fault outages exclude forced outages, which are those that occur due to intentional manual operation of switching devices.

The fault outage sub-parameters measure network reliability by using an aggregate number of fault outages per annum for each of the transmission element types, namely, lines, transformers and reactive plant.

Figure 10.1 shows our historical performance for the three kinds of fault outages along with our proposed targets, floors and caps. In each case it shows that fault outages were notably higher in 2016 than in more recent years due to weather related outage events. This is reflected in the target, which is the average of the past five years' outcomes, and the floor, which is the 95th percentile of the distribution fitted by ACIL Allen Consulting. The cap is set at the 5th percentile of the probability distribution.

Figure 10.1: Historical performance and proposed parameter values – Fault outages



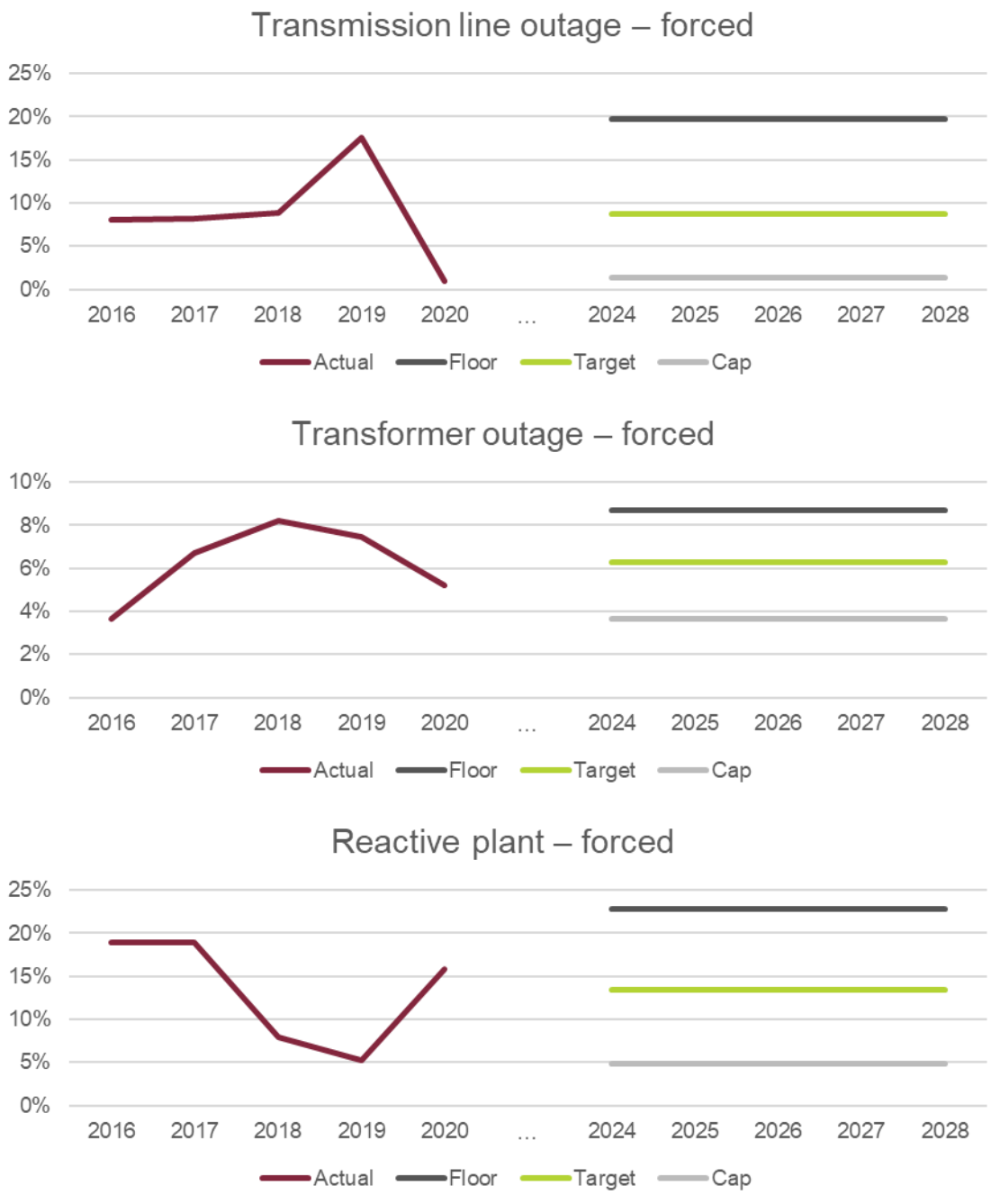
10.3.2 Unplanned outage circuit event rate – forced

An unplanned outage circuit event – forced, is commonly referred to as a forced outage. It is any element outage that occurs because of intentional manual operation of switching devices based on the requirement to undertake urgent and unplanned corrective activity, where less than 24 hours' notice was given to the affected customer(s) and/or AEMO.

Similarly to the fault outage rate, the forced outage sub-parameters measures network reliability by using an aggregate number of forced outages per annum for lines, transformers and reactive plant.

Figure 10.2 shows our historical performance for the three kinds of forced outages along with our proposed targets, floors and caps, calculated in a consistent manner with that described for fault outages above.

Figure 10.2: Historical performance and proposed parameter values – Forced outages



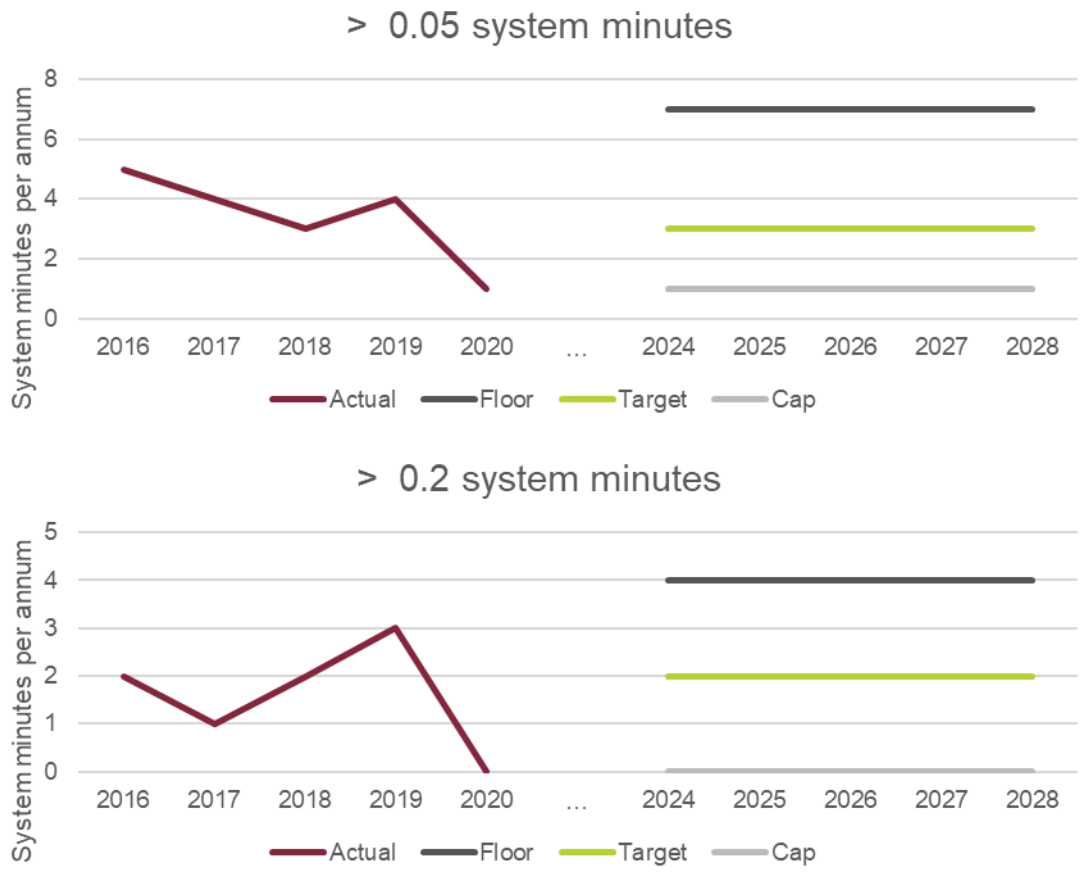
10.3.3 Loss of supply event frequency

The loss of supply event frequency parameter includes and counts both small (x) and large (y) loss of supply events per annum. System minutes per annum is calculated using energy not supplied for each supply interruption divided by peak network demand.

Our performance is analysed in terms of the number of events where system minutes exceed x and y thresholds. Under the current scheme x is 0.05 system minutes and y is 0.2 system minutes. We propose to retain these levels for the 2023-24 to 2027-28 regulatory period.

Figure 10.3 shows our historical performance in loss of supply events for both measures along with our proposed targets, floors and caps. There is a downward trend in both small and large loss of supply events, with the latter being zero in 2020.

Figure 10.3: Historical performance and proposed parameter values – loss of supply events

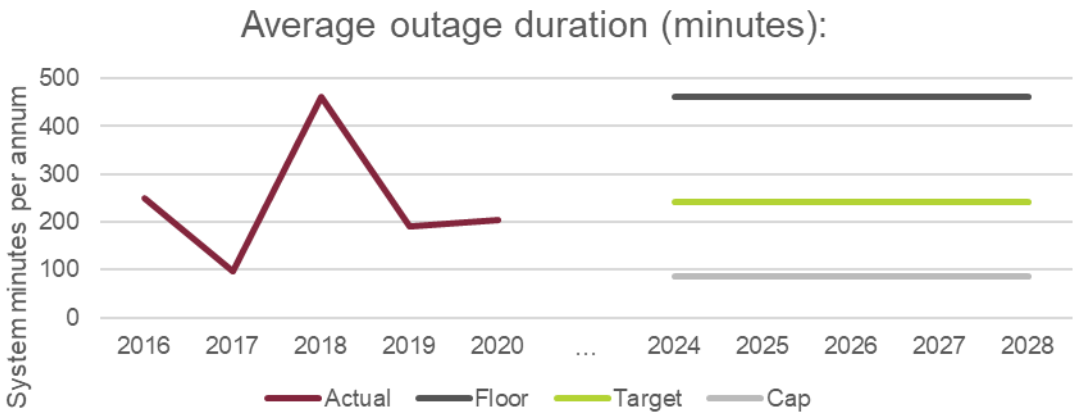


10.3.4 Average outage duration

The average outage duration parameter measures the average time to restore supply following loss of supply events. It is calculated by dividing the total loss of supply event duration time by the number of loss of supply events in a given year. The performance measure of the average outage duration parameters will be calculated on a rolling average basis in accordance with the STPIS.

Figure 10.4 shows our historical performance in terms of average outage duration along with our proposed targets, floors and caps. Performance in this metric between 2016 and 2020 shows no particular underlying trend.

Figure 10.4: Historical performance and proposed parameter values – loss of supply events



10.3.5 Proper operation of equipment

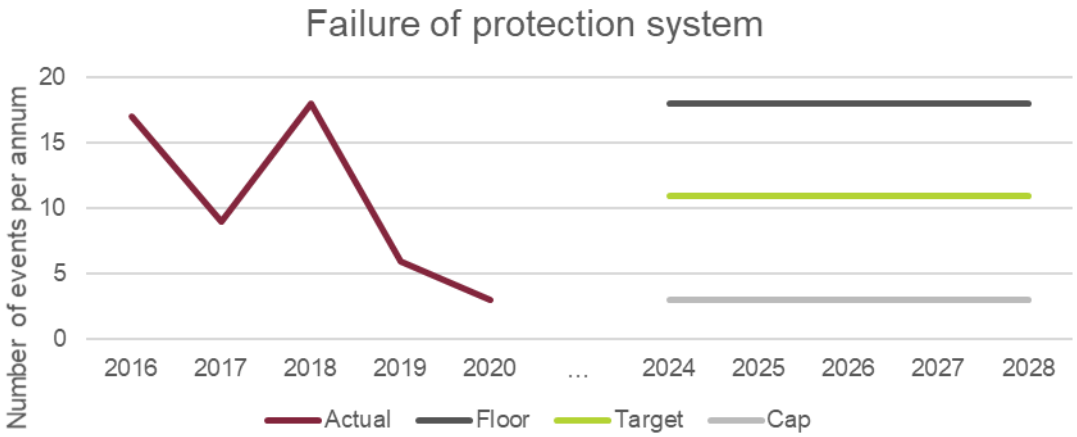
The proper operation of equipment measure has three components, recording the number of events of each of the following types:

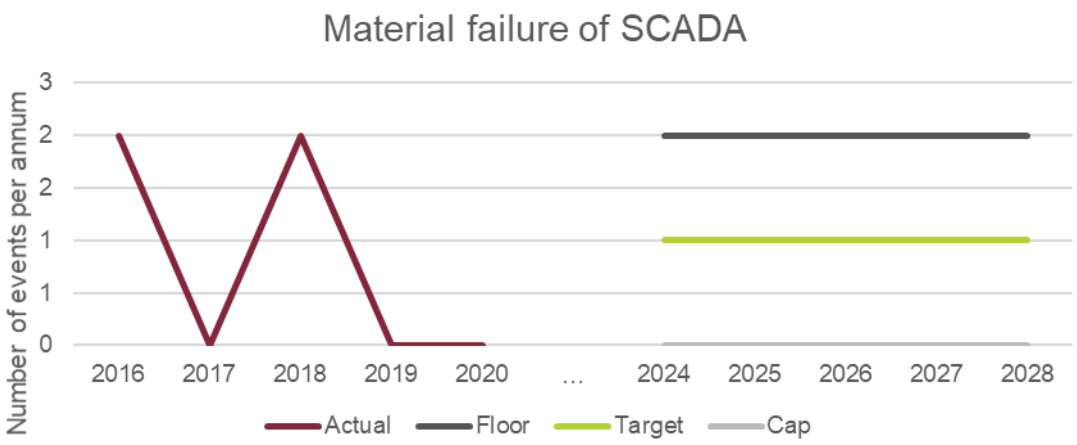
1. failure of protection system;
2. material failure of the Supervisory Control and Data Acquisition (SCADA) system; and
3. incorrect operational isolation of primary or secondary equipment.

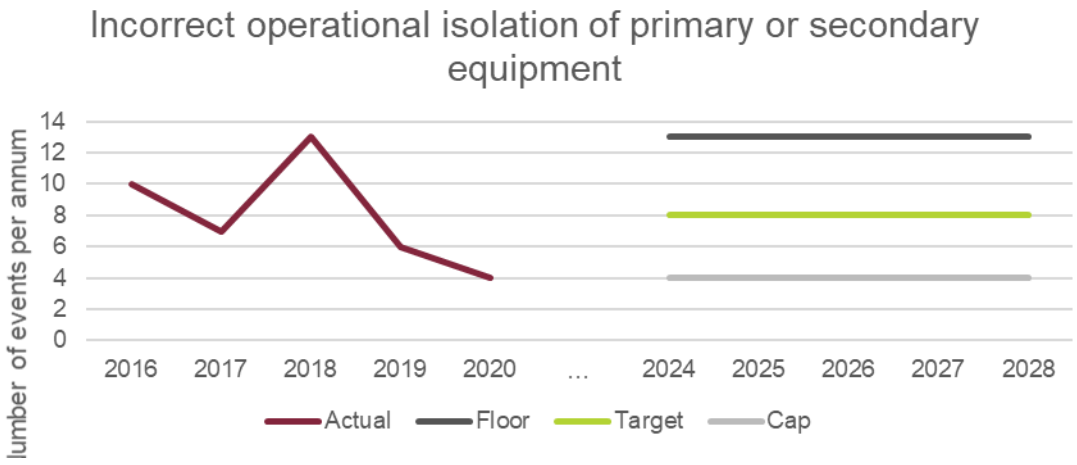
This parameter is a 'report only' parameter with zero weighting applied in the incentive scheme.

Our historical performance against these three measures is shown in Figure 10.5 below. There is a clear downward trend in both failure of protection systems and incorrect operation of primary and secondary equipment. The data relating to SCADA failure shows three years with no events and the other two years having two events each.

Figure 10.5: Historical performance and proposed parameter values – loss of supply events







10.3.6 Historical performance

Historical performance against the service performance sub parameters discussed above is summarised in Table 10.1.

Table 10.1: Reliability data 2016-2020

Sub Parameter	2016	2017	2018	2019	2020
Lines outage rate – fault	32.09%	7.34%	15.18%	10.53%	15.94%
Transformers outage rate – fault	35.29%	13.43%	26.87%	23.88%	13.43%
Reactive plant outage rate – fault	51.35%	18.92%	15.79%	31.58%	10.53%
Lines outage rate - forced outage	8.02%	8.26%	8.93%	17.54%	0.89%
Transformers outage rate - forced outage	3.68%	6.72%	8.21%	7.46%	5.22%
Reactive plant outage rate - forced outage	18.92%	18.92%	7.89%	5.26%	15.79%
No. of events >0.05 system minutes	5	4	3	4	1
No. of events >0.2 system minutes	2	1	2	3	0
Average outage duration (minutes)	251	97	463	192	205

Failure of protection system (No. events)	17	9	18	6	3
Material failure of Supervisory Control and Data Acquisition (SCADA) system (No. events)	2	0	2	0	0
Incorrect operational isolation of primary or secondary equipment (No. events)	10	7	13	6	4

10.3.7 Proposed probability distributions

As noted above, we retained ACIL Allen Consulting to review our performance data and recommend appropriate distributions, targets, caps and floors in accordance with version 5 of the scheme.

ACIL Allen Consulting used the @RISK product, a risk analysis and simulation add-in tool for Microsoft Excel, to determine the types of probability distribution that best fit the reliability data. In doing this, ACIL Allen took account of the AER's principles for selecting a distribution to calculate caps and floors, namely that:

- The chosen distribution should reflect any inherent skewness of the performance data.
- The distribution should not imply that impossible values are reasonably likely. For example, the distribution for an average circuit outage rate sub-parameter should not imply that values below zero per cent are reasonably likely.
- Discrete distributions should be used to represent discrete data. For example, a discrete distribution such as the Poisson distribution should be used when calculating caps and floors for loss of supply sub-parameters. Continuous distributions should not be used.

The table below summarises the probability distribution functions that have been chosen to best fit the parameter data.

Table 10.2: Summary of best fit distributions

Sub Parameter	Best Fit Distribution	5% POE	95% POE
Lines outage rate - fault	Pearson5	6.84%	34.10%
Transformers outage rate - fault	Weibull	9.46%	36.58%
Reactive plant outage rate – fault	Pearson5	9.63%	59.05%
Lines outage rate - forced outage	Weibull	1.35%	19.74%
Transformers outage rate - forced outage	Weibull	3.65%	8.68%
Reactive plant outage rate - forced outage	Weibull	4.90%	22.87%
No. of events >0.05 system minutes	Poisson	1	7
No. of events >0.2 system minutes	Poisson	0	4
Average outage duration (minutes)	Gamma	86	462
Failure of protection system (No. events)	Uniform	3	18
Material failure of supervisory control and data acquisition (SCADA) system (No. events)	Poisson	0	2
Incorrect operational isolation of primary or secondary equipment (No. events)	Poisson	4	13

10.3.8 Proposed performance targets, caps, floors and weightings

Table 10.3 summarises the proposed floors, targets and caps for each performance measure. The table also shows the weightings, which are consistent with those specified in Table 3.1 of the STPIS.

Table 10.3: Proposed performance targets, caps, floors and weightings

Sub Parameter	Floor	Target	Cap	Weighting (% of MAR)
Unplanned outage circuit event rate				**0.75**
Lines event rate – fault	34.10%	16.21%	6.84%	0.20
Transformer event rate – fault	36.58%	22.58%	9.46%	0.20
Reactive plant event rate – fault	59.05%	25.63%	9.63%	0.10
Lines event rate – forced	19.74%	8.73%	1.35%	0.10
Transformer event rate – forced	8.68%	6.26%	3.65%	0.10
Reactive plant event rate – forced	22.87%	13.36%	4.90%	0.05
Loss of Supply Event Frequency				**0.30**
Events > 0.05 System Minutes	7	3	1	0.15
Events > 0.2 System Minutes	4	2	0	0.15
Average Outage Duration				**0.20**
(minutes)	462	242	86	0.20
Proper operation of equipment				**0.00**
Failure of protection system (No. events)	18	11	3	0.00
Material failure of SCADA (No. events)	2	1	0	0.00
Incorrect operational isolation of primary or secondary equipment (No. events)	13	8	4	0.00

It should be noted that the performance measures for the ‘unplanned outage circuit event rate’ and the ‘average outage duration’ will be calculated on a rolling average basis, in accordance with Appendix E of the STPIS. This approach reduces the impact of annual variations in performance outcomes, which may not reflect underlying performance.

10.4 Market impact component

The market impact component (MIC) provides an incentive for us to minimise the impact of transmission outages that can affect wholesale electricity market outcomes. To give effect to this component of the STPIS, we are required to propose:

1. a performance target;
2. an unplanned outage event limit; and
3. a dollar per dispatch interval incentive.

In November 2021, the AER issued a draft guidance note to provide further information on how the MIC targets should be set. In this guidance note, the AER clarifies that:

- We must include in our Revenue Proposal:

- data in accordance with the MIC definitions set out at Appendix C for the preceding seven calendar years.
- proposed values for the MIC parameter, including a performance target.

- Data used to calculate the MIC parameter must be accurate, reliable and consistently recorded based on the parameter definition in Appendix C to the Scheme.
- The MIC performance target is to be calculated in accordance with clause 4.2(g) of the Scheme, where the TNSP is applying version 5 of the Scheme for a second regulatory period (which is the case for ElectraNet), namely:
  - The performance target is the TNSP's average of the median five out of seven of the preceding seven calendar years of the annual performance measure.
  - If the performance target calculated is less than 100 counts, the performance target will be adjusted to a minimum performance target of 100 counts.
- The 'preceding seven calendar years' refers to the seven years of annual performance measure data completed before the financial year in which a TNSP submits its Revenue Proposal to the AER.

In accordance with the scheme and the AER's draft guidance note, our MIC parameter values have been calculated as follows:

- The performance target for the 2023-24 to 2027-28 regulatory period is calculated as the average of the annual performance measures using the median five out of seven preceding calendar year values of the performance measure. The performance measure is the raw annual performance adjusted for the unplanned outage event limit.
- The unplanned outage event limit to be applied for the 2023-24 to 2027-28 regulatory period is calculated as 17 per cent of the performance target calculated.
- The dollars per dispatch interval is calculated by taking one per cent of the MAR for the first year of the regulatory period and dividing it by the performance target.

Table 10.4 below shows our performance history in relation to the market impact parameter and the proposed parameters for the 2023-24 to 2027-28 regulatory period.

Table 10.4: Market impact component historical data and proposed parameters

Regulatory Period	Raw performance count			Capped unplanned count	Adjusted performance count
	Planned	Unplanned	Total	Min of Raw Unplanned or 0.17*(M)	**Planned + capped unplanned**
(RP)	**(a)**	**(b)**	**(a) +(b)**	**(d)**	**(e)**
2014	87	9	96.0	9.0	96.0
2015	10004	793	10797.0	793.0	10797.0
2016	11099	586	11684.5	586.0	11684.5
2017	2090	238	2328.0	238.0	2328.0
2018	6953	267	7220.0	267.0	7220.0
2019	7677	179	7855.5	179.0	7855.5

2020	3162	4063	7225.0	1204.5	4366.5
2021					
Max			11684.5		11684.5
Min			96		96
Average of 5 median			7085.1		**6513.4**
Unplanned outage event limit			1204.5		

In accordance with Appendix C and Appendix F of the scheme, the above historic data produces:

1. a raw performance target (M) of 7085.1 dispatch intervals;
2. an unplanned outage event limit of (17% of M) of 1204.5 dispatch intervals; and
3. a dollar per dispatch interval of $537 (based on a smoothed 2023-24 MAR of $350m nominal).

10.5 Network capability component

The network capability component of the STPIS provides us with an incentive to fund low cost works to increase network capacity to benefit customers.

In accordance with this component of the STPIS, we have developed a range of projects to improve network capability. AEMO has assessed the projects to identify those it considers will deliver the most efficient outcomes for customers. Table 10.5 summarises our priority projects from our NCIPAP as reviewed and endorsed by AEMO. [2]

Table 10.5: Network capability improvement program

Proposed project	Timing	Expenditure ($m nom)	Payback period (years)	Benefit

[2] See AEMO letter to ElectraNet attachment ENet 034 to this Revenue Proposal.

Robertstown to Tungkillo Line Uprating	2025	2.4	<1	Increase clearances and remove/replace lower rated plant as necessary to increase the design capability of the transmission lines
Davenport to Cultana Line Uprating	2025	1.5	2	Remove and replace plant rated lower than the design capability of the transmission lines to release further transfer capacity on the Davenport-Cultana line
Transmission line ratings improvements	2028	1.8	5	Improve ratings based on ambient conditions which are correlated with high renewable generation
Enhancing Reactive Power and Voltage Control Capability of Riverland	2024	5	5	Install an additional 15 MVAr capacitor bank at Monash substation and an automated capacitor switching control system to manage voltage and reactive power support to improve Murraylink export capability
Total		**10.7**		

A copy of our NCIPAP is provided as Appendix A. It has been prepared in accordance with the requirements of clause 5.2 of the STPIS.

Appendix A : Network Capability Incentive Parameter Action Plan

ElectraNet