Draft Decision

ElectraNet Transmission Determination 2023 to 2028

(1 July 2023 to 30 June 2028)

Attachment 10
Service target performance incentive scheme

September 2022

AER
AUSTRALIAN
ENERGY
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Inquiries about this publication should be addressed to:

Amendment record

Version	Date	Pages
1	30 September 2022	15

Note

This attachment forms part of the AER's draft decision on ElectraNet's 2023–28 transmission determination. It should be read with all other parts of the draft decision.

The draft decision includes the following documents:

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

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10 Service target performance incentive scheme

The service target performance incentive scheme (STPIS) provides a financial incentive to transmission network services providers (TNSPs) to maintain and improve service performance. The current version of the STPIS, version 5, will continue to apply to ElectraNet, including the three standard components of the STPIS—the service component (SC), the market impact component (MIC) and the network capability component (NCC).

The SC provides a reward/penalty of +/- 1.25 per cent of maximum allowed revenue (MAR) for the relevant calendar year to improve network reliability, by focussing on unplanned outages. The SC is designed to encourage TNSPs to seek to reduce the number of unplanned network outages and to promptly restore the network in the event of unplanned outages that result in supply interruptions. This component is also designed to indicate potential reliability issues.[1]

The MIC provides an incentive to TNSPs to minimise the impact of transmission outages that can affect wholesale market outcomes. Under the MIC, TNSPs receive a reward or penalty of up to +/- 1 per cent of MAR for the relevant calendar year. The MIC measures performance against the market impact parameter which is the number of dispatch intervals where an outage on the TNSP's network results in a network outage constraint with a marginal value greater than $10/MWh (MIC count).[2]

Each TNSP's annual MIC count is measured against its target, where the target is calculated by averaging the median five of the last seven years' performance. Further, the dollars per dispatch interval ($/DI) associated with the reward/penalty for each count can be directly calculated for the regulatory control period from the MIC target, and the MAR. Both the target and the $/DI are fixed for the regulatory control period.[3]

The NCC is designed to encourage TNSPs to develop projects (up to a total of one per cent of the proposed MAR per year) in return for a pro-rata incentive payment of up to 1.5 per cent of MAR depending on the successful completion of proposed projects. This component encourages TNSPs to examine their networks to identify suitable low cost one-off operational and capital expenditure projects that improve the capability of the transmission network at times when it is most needed.

10.1 Draft decision

We will apply all components of the version 5 of the STPIS to ElectraNet for the 2023–28 regulatory control period.

Our draft decision outlined below is based on ElectraNet's 5 years of historical performance data including the 2021 calendar year.[4]

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[1]   AER, Final – Service Target Performance Incentive Scheme, October 2015, cl. 2.2(a)(1–3).

[2]   AER, Final – Service Target Performance Incentive Scheme, October 2015, Appendix C

[3]   The target will be calculated from the average of the five values remaining from the last seven years of data excluding the largest and smallest annual values.

[4]   Under STPIS, performance targets calculations must be based on performance history data up to the year ending immediately prior to the submission of the revenue proposal (2021).

Table 10.1 Draft decision — Service Components caps floors and target for 2023–28

Parameter	Floor	Target	Cap
Unplanned outage circuit event rate (%)			
Transmission line - fault	19.46	11.42	6.02
Transformer - fault	31.65	17.61	8.23
Reactive plant - fault	31.58	17.96	9.48
Transmission line - forced	19.52	8.39	1.19
Transformer - forced	12.30	8.06	4.62
Reactive plant - forced	24.63	13.72	1.30
Loss of supply events frequency			
No. of events > 0.05 system minutes	5	2	0
No. of events > 0.2 system minutes	3	1	0
Average outage duration			
Average outage duration	487	231	95
Proper operation of equipment			
Failure of protection system	27	9	0
Material failure of SCADA	2	0	0
Incorrect operational isolation of primary or secondary equipment	12	8	3

Source: AER Analysis

Table 10.2 Draft decision — Market Impact Component parameter values for 2023–28

Parameter	
Target	7096
Unplanned outage event limit	1207
Dollar per dispatch interval	562

Source: AER Analysis

Table 10.3 Draft decision — Network Capability Component for 2023–28

Priority project name	Proposed capex ($ million)	Proposed opex ($ million)	Amount approved ($ million)
1. Robertstown to Tungkillo Line Uprating	2.4		2.4
2. Davenport to Cultana Line Uprating	1.5		1.5
3. Transmission line ratings improvements	1.8	4.2	5.9
4. Enhancing Reactive Power and Voltage Control Capability of Riverland	5.0		5.0
Total	**10.7**	**4.2**	**14.8**

Source: AER Analysis; AEMO review of ElectraNet Network Capability Incentive Parameter Action Plan (NCIPAP) for 1 July 2023 to 30 June 2028, 14 Dec 2021.

10.2 ElectraNet's proposal

ElectraNet's revenue proposal sought to apply version 5 of the STPIS as follows:

- the SC parameter targets are set equal to average historic performance and the caps and floors are set at the 5th and 95th percentiles of historic performance[5]

- the MIC performance data from 2016–20 is included to enable calculation of the parameter values set out in clause 4.2 (b) (1)–(3), being the annual performance target, the unplanned outage event limit and the dollar per dispatch interval incentive[6]

- the Network Capability Incentive Parameter Action Plan (NCIPAP) proposes four priority projects to improve network capability. The total proposed cost of the NCIPAP is approximately $11 million, which may lead to an incentive reward up to 50 per cent of the cost. This would amount to about $16 million, over the 2023–28 regulatory control period if the relevant conditions are met.[7]

10.3 Assessment approach

A revenue determination for a TNSP is to specify, amongst other things, the annual building block revenue requirement for each regulatory year of the regulatory control period.[8] In turn, the annual building block revenue requirement must be determined using a building block approach, under which, one of the building blocks is the revenue increments or decrements (if any) for that year arising from the application of any STPIS (and other schemes).[9] We have assessed ElectraNet's revenue proposal against the requirements of the STPIS version 5.

10.3.1 Service component

We assessed whether ElectraNet's proposed performance targets, caps and floors comply with the STPIS requirements for:

- average circuit outage rate, with six sub parameters[10]

- loss of supply event frequency, with two loss of supply event sub-parameters[11]

- average outage duration[12]

- proper operation of equipment, with three sub-parameters.[13]

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5 ElectraNet, Attachment 10 Service Target Performance Incentive Scheme Revenue Proposal 2023-24 to 2027-28, 31 January 2022, pp. 12–14.

6 ElectraNet, Attachment 10 Service Target Performance Incentive Scheme Revenue Proposal 2023-24 to 2027-28, 31 January 2022, pp. 15–16.

7 ElectraNet, Attachment 10 Service Target Performance Incentive Scheme Revenue Proposal 2023-24 to 2027-28, 31 January 2022, pp. 16–17.

8 NER, cl. 6A.4.2(a)(2).

9 NER, cll. 6A.5.4(a)(5), 6A.5.4(b)(5) and 6A.7.4.

10 AER, Final – Service Target Performance Incentive Scheme, October 2015, Appendix A, p. 26.

11 AER, Final – Service Target Performance Incentive Scheme, October 2015, Appendix A, p. 26

12 AER, Final – Service Target Performance Incentive Scheme, October 2015, Appendix A, p. 30.

13 AER, Final – Service Target Performance Incentive Scheme, October 2015, Appendix A, p. 32.

Under the STPIS, we must accept ElectraNet's proposed parameter values if they comply with the requirements of clause 3.2 of STPIS. We may reject them if they are inconsistent with the objectives of the STPIS.[14] We measure actual performance for the 'average circuit outage rate' and 'average outage duration' parameters on a two-calendar year rolling average in accordance with appendix E of the STPIS.

We assessed ElectraNet's SC proposal against the requirements of the STPIS–that is, whether:[15]

- ElectraNet's data recording systems and processes produce accurate and reliable data and whether the data is recorded consistently based on the parameter definitions under the STPIS

- the proposed performance targets were equal to the average of the most recent five years of performance data

- any adjustments to the proposed targets are warranted and reasonable

- ElectraNet applied a sound methodology, with reference to the performance targets, to calculate the proposed caps and floors

- any adjustment to a performance target was applied to the cap and floor of that parameter.

We also assessed the probability distributions applied by ElectraNet to calculate caps and floors to determine whether a sound methodology was used.

10.3.2 Market impact component

We assessed ElectraNet's MIC proposal against the requirements of the STPIS—that is, whether:

- data used to calculate the market impact parameter is accurate and reliable, and consistently recorded based on the parameter definition in Appendix C[16]

- the proposed performance target was calculated in accordance with the requirements of clause 4.2(g) in version 5 of the STPIS

- the proposed unplanned outage event limit has been calculated in accordance with the requirements of clause 4.2(h) in version 5 of the STPIS

- the proposed dollar per dispatch interval has been calculated in accordance with clause 4.2(j) in version 5 of the STPIS.

Where ElectraNet's proposed values for the market impact parameter do not comply with the requirements of the STPIS or is otherwise inconsistent with the objectives of the scheme[17], we will reject the proposed values and provide substitute values which comply with the STPIS.

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[14]   AER, Final – Service Target Performance Incentive Scheme, October 2015, cl. 3.2.

[15]   AER, Final – Service Target Performance Incentive Scheme, October 2015, cl. 3.2.

[16]   AER, Final – Service Target Performance Incentive Scheme, October 2015, clause 4.2(c).

[17]   AER, Final – Service Target Performance Incentive Scheme, October 2015, cl 4.2(d).

10.3.3 Network Capability Component

We assessed ElectraNet's NCC against the STPIS requirements to take into account: [18]

- the likely effect of the priority project improvement on wholesale market outcomes, including inter-regional outcomes

- the likely effect of the priority project improvement in ensuring that the transmission network can meet demand at an injection point without major network augmentation or replacement

- whether the priority project improvement is appropriate, taking into account the forecast changes in demand at a relevant injection point

- the benefits to consumers resulting from the priority project improvement

- the extent to which a TNSP would be incentivised or required to undertake such a project under the NER or any other applicable regulatory obligations

- the time taken for a project to have a net positive benefit.

- any relevant information contained in the TNSP's most recent annual planning report 8.

- whether the average total expenditure of all the TNSP's priority projects in each regulatory year is not greater than 1 per cent of the TNSP's annual average MAR[19].

10.4 Interrelationships

The STPIS takes into account any other provisions in the NER that incentivise TNSPs to minimise capital or operating expenditure. One of the objectives of the STPIS is to assist in the setting of efficient capital and operating expenditure allowances by balancing the incentive to reduce actual expenditure with the need to maintain and improve reliability for customers and reduce the market impact of transmission congestion.

The STPIS will interact with the capital expenditure sharing scheme (CESS) and the opex efficiency benefit sharing scheme (EBSS). The STPIS allows us to adjust the performance targets of the SC for the expected effects on the TNSP's performance from any increases or decreases in the volume of capital works planned during the regulatory control period.[20] In conjunction with the CESS and the EBSS, the STPIS will ensure that:

- any additional investments to improve service quality are based on prudent economic decisions

- reductions in capex and opex are achieved efficiently, rather than at the expense of service levels to the network users.

10.5 Submissions

We received no submissions from stakeholders regarding the application of STPIS to ElectraNet for the 2023–28 regulatory control period.

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18   AER, Final – Service Target Performance Incentive Scheme, October 2015, cl. 5.2(l).

19   AER, Final – Service Target Performance Incentive Scheme, October 2015, cl 5.2(b)(vi)

20   Ibid, cl. 3.2(j)(2).

10.6 Reasons for draft decision

We calculated ElectraNet's performance target values using the 5-year performance data available to us during the 2017–21 period.

We will apply version 5 of the STPIS with the AusNet MIC exclusions clarification. The reasons for our draft decision are outlined below.

10.6.1 Service component

Performance targets

Performance targets must equal the TNSP's average performance history over the past five years unless they are subject to an adjustment under clause 3.2(i) or (j) of the STPIS. We have determined performance targets that are equal to the arithmetic mean of the 2017–21 performance data.

We do not accept ElectraNet's calculated performance data because it is not based on the latest available historical data for 2017–21.

We have thus calculated ElectraNet's SC targets using 2017–21 performance data. The results are outlined in Table 10.1.[21]

Caps and floors

Proposed caps and floors must be calculated with reference to the proposed performance targets using a sound methodology. In arriving at our draft decision we calculated ElectraNet's cap and floor values using our @risk model (Table 10.4).[22] Our approach used five years' of performance data to determine a statistical distribution that best fits that data—with the caps and floors set at two standard deviations either side of the mean (using a normal distribution); or at the 5th and 95th percentiles (if using a distribution other than the normal distribution).

Table 10.4 Draft decision — Distribution, Floors and Caps for 2023–28

Parameter	Distribution	Floor (95th percentile)	Cap (5th percentile)
Unplanned outage circuit event rate (%)			
Transmission line - fault	LogLogisitc	19.46	6.02
Transformer - fault	LogLogistic	31.65	8.23
Reactive plant - fault	Pearson5	31.58	9.48
Transmission line - forced	Weibull	19.52	1.19
Transformer - forced	LogLogistic	12.30	4.62
Reactive plant - forced	Uniform	24.63	1.30
Loss of supply events frequency			
No. of events > 0.05 system minutes	Poisson	5	0
No. of events > 0.2 system minutes	Poisson	3	0

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[21] AER, Final – Service Target Performance Incentive Scheme, October 2015, cl 3.2(f).

[22] Our @risk model has been used to set the cap and floor range in most of our recent determinations.

Parameter	Distribution	Floor (95th percentile)	Cap (5th percentile)
Average outage duration			
Average outage duration	Pearson6	487	95
Proper operation of equipment			
Failure of protection system	Geomet	27	0
Material failure of SCADA	Geomet	2	0
Incorrect operational isolation of primary or secondary equipment	Poisson	12	3

Source: AER Analysis

10.6.2 Market Impact Component

The performance target to apply to ElectraNet for the next regulatory control period is equal to the TNSP's average annual performance history against the market impact parameter of the median is at Table 10.2.

Performance target

We do not accept ElectraNet's calculated performance data because it is not based on the latest available historical data for 2015–21.

The performance target is calculated in accordance with clause 4.2(f) of version 5 of the STPIS.

Based on its historical data for the period 2015 to 2020, ElectraNet has proposed a performance target of 7085 dispatch intervals.[23]

Our draft decision is to apply the version 5 of the STPIS to ElectraNet for the 2023–28 regulatory control period, but with clarifications. This STPIS clarification applies to semi-dispatch renewable energy generators. This was outlined in AusNet Services' revenue determination for 2022–27 (AusNet 2022–27).[24]

Our January 2022 Final Decision – AusNet Services transmission 2022-27, was published in January 2022, just prior to when ElectraNet submitted its proposal.

In AusNet's Final Decision, we considered the impact that changes in the NEM's energy mix have had on the way semi-dispatch generators bid into the market. We recognised the potential for generator bidding behaviour of semi scheduled generators to appear as a constraint when this is outside a TNSP's control. In such cases, we considered these should be excluded from MIC performance.[25]

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23   ElectraNet, Attachment 10 Service Target Performance Incentive Scheme Revenue Proposal 2023-24 to 2027-28, 31 January 2022, p. 16.

24   AER, Final Decision, AusNet Services Transmission Determination 2022 to 2027, Attachment 10, Service target performance incentive scheme, January 2022, pp. 12-19.

25   AER, Final Decision, AusNet Services Transmission Determination 2022 to 2027, Attachment 10, Service target performance incentive scheme, January 2022, pp. 12-19.

In its response to an AER information request asking how the AusNet clarification could apply to ElectraNet, ElectraNet submitted that the AusNet clarification for Variable Renewable Energy (VRE) generation is unlikely to apply in South Australia.

That is, the AusNet clarification was written for AusNet and other TNSPs that have *a single generating unit written in their constraint equations* whereas ElectraNet primarily has multiple generating units written into its constraint equations.[26]

Notwithstanding the above, ElectraNet is intending to investigate whether AusNet clarification for VREs will apply to it by reviewing its constraint equations and submitting its findings in its revised revenue proposal.[27]

10.6.3 Network capability component

The NCC is designed to drive TNSP operation and management of its network assets to develop low-cost one-off projects that deliver value for money for consumers and that are not otherwise incentivised through the regulatory framework.

Our draft decision regarding ElectraNet's NCIPAP is to accept all proposed priority projects, as shown in Table 10.3 above. Our reasons for accepting the priority projects are outlined below.

The average total expenditure of the priority projects outlined in each regulatory year is not greater than 1 per cent of ElectraNet's average annual MAR as required by clause 5.2(b)(vi) of the STPIS. These projects were also endorsed by the Australian Energy Market Operator (AEMO) in its role of reviewing ElectraNet's NCIPAP.[28]

Priority projects

Clause 5.2 (h) of the scheme requires TNPSs to consult with AEMO prior to submitting priority project proposals under the NCIPAP to the AER. AEMO assesses project need, improvement targets, likely material benefits, and ranking of the projects.[29]

We accept all of the below priority projects as we consider they meet the scheme requirements as follows: to improve capability of the transmission system at times when transmission network users place greatest value on the reliability of the transmission system.[30]

Priority project 1: Robertstown to Tungkillo Line Uprating

ElectraNet stated that this project will increase the ElectraNet's network's capability between the termination point of Project EnergyConnect and the greater Adelaide region. This will

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[26]   ElectraNet, Response to AER IR#04, - STPIS - Market Impact Component (MIC) target setting, 10 August 2022.

[27]   ibid

[28]   AEMO. AEMO review of ElectraNet Network Capability Incentive Parameter Action Plan (NCIPAP) for 1 July 2023 to 30 June 2028, 14 Dec 2021.

[29]   AEMO. AEMO review of ElectraNet Network Capability Incentive Parameter Action Plan (NCIPAP) for 1 July 2023 to 30 June 2028, 14 Dec 2021, p.2.

[30]   AER, Final – Service Target Performance Incentive Scheme, October 2015, clause 5.2(a)(2).

enhance Project EnergyConnect's ability to support new entrant renewables in South Australia, resulting in lower wholesale prices for customers with an expected net benefit of $3.6 million per annum. ElectraNet will uprate the Robertstown to Tungkillo and Robertstown to Para 275 kV lines from T100 rating to T120 rating by upgrading 15 low hanging spans with a capital cost of $2.43 million.[31]

Priority project 2: Davenport to Cultana Line Uprating

This project will uprate ElectraNet's network from Davenport to Cultana by removing the plant limits to reach the design capability. This will improve the output of renewable energy generation in the Eyre Peninsula and result in lower wholesale prices for customers with an expected net benefit of $0.79 per annum.[32]

For this project, ElectraNet will remove and replace plants that are rated lower than the design capability of the transmission lines to release further transfer capacity with a capital cost of $1.53 million. On F1936 Davenport-Cultana No 2 275 kV line, a number of span(s) will be lifted to achieve higher clearances allowing an increase in the maximum operating temp to T100 from T80.

Priority project 3: Transmission Line Ratings Improvement

This project will improve the rating of all lines across the network by applying a 10-band rating system with a capital cost of $1.8 million and an operating cost of $4.15 million. This will reduce congestion in the network, especially in the mid-north region where there are abundant renewable energy resources. Eventually, this project is expected to reduce the wholesale price for customers.

ElectraNet stated that higher ratings can be applied to transmission lines under favourable weather conditions. Therefore, it has developed a strategy to apply a 10-band rating, which is expected to provide increased ratings most of the time, with a small downside risk of lower rating than currently applied occasionally when the temperature is extremely high. To implement this strategy across the network ElectraNet requires the following:

- Tools and Systems development

- Integration of temperature-based line rating tool

- Development of tension rating tool to verify temperature-based ratings

- Development of micro-climate model

- Calculation of risk adjusted 10-band ratings

- Risk assessment and system verification

- Integration with the Energy Management System (EMS).

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[31] ElectraNet, Revenue proposal, Attachment 10, Appendix A Network Capability Incentive Parameter Action Plan Revenue Proposal 2023-24 to 2027-28, 31 January 2022, pp. 11–13.

[32] ElectraNet, Revenue proposal, Attachment 10, Appendix A Network Capability Incentive Parameter Action Plan Revenue Proposal 2023-24 to 2027-28, 31 January 2022, pp. 12–16.

Applying the ratings across the transmission network and will alleviate $1.25 million (net benefit) per year of generation cost on average.[33]

Priority project 4: Increase Murraylink transfer capability

This project improves the transfer capability between SA and VIC on the Murraylink. This will increase the import and export of low-cost renewable energy across the interconnector and benefit consumers from both states with a market benefit of $.092 million.

At a capital cost of $5.02 million, ElectraNet with add an additional 15 MVAr capacitor bank to the Riverland 132 kV network (Monash substation or North West Bend) including an automated capacitor switching control system installed to manage voltage and reactive power support. The project will also upgrade the existing runback control scheme to include bi-directionality and allow it to run forward if required.[34]

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[33] ElectraNet, Revenue proposal, Attachment 10, Appendix A Network Capability Incentive Parameter Action Plan, Revenue Proposal 2023-24 to 2027-28, 31 January 2022, pp. 17–20.

[34] ElectraNet, Revenue proposal, Attachment 10, Appendix A Network Capability Incentive Parameter Action Plan, Revenue Proposal 2023-24 to 2027-28, 31 January 2022, pp. 21–22.

Glossary

Term	Definition
Capex	Capital expenditure
CESS	Capital expenditure sharing scheme
DI	Dispatch interval
EBSS	Efficiency benefit sharing scheme
MAR	Maximum allowed revenue
MIC	Market impact component
NCC	Network capability component
NCIPAP	Network capability incentive parameter action plan
Opex	Operating expenditure
RIN	Regulatory information notice
SC	Service component
STPIS	Service target performance incentive scheme
TNSP	Transmission network service provider