



FINAL DECISION
TransGrid transmission
determination
2015–16 to 2017–18

Attachment 11 – Service target
performance incentive scheme
(STPIS)

April 2015

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Note

This attachment forms part of the AER's final decision on TransGrid's revenue proposal 2015–18. It should be read with other parts of the final decision.

The final decision includes the following documents:

Overview

Attachment 1 – maximum allowed revenue

Attachment 2 – regulatory asset base

Attachment 3 – rate of return

Attachment 4 – value of imputation credits

Attachment 5 – regulatory depreciation

Attachment 6 – capital expenditure

Attachment 7 – operating expenditure

Attachment 8 – corporate income tax

Attachment 9 – efficiency benefit sharing scheme

Attachment 10 – capital expenditure sharing scheme

Attachment 11 – service target performance incentive scheme

Attachment 12 – pricing methodology

Attachment 13 – pass through events

Attachment 14 – negotiated services

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Shortened forms

Shortened form	Extended form
AARR	aggregate annual revenue requirement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ASRR	annual service revenue requirement
augex	augmentation expenditure
capex	capital expenditure
CCP	Consumer Challenge Panel
CESS	capital expenditure sharing scheme
CPI	consumer price index
DRP	debt risk premium
EBSS	efficiency benefit sharing scheme
ERP	equity risk premium
MAR	maximum allowed revenue
MRP	market risk premium
NEL	national electricity law
NEM	national electricity market
NEO	national electricity objective
NER	national electricity rules
NSP	network service provider

Shortened form	Extended form
NTSC	negotiated transmission service criteria
opex	operating expenditure
PPI	partial performance indicators
PTRM	post-tax revenue model
RAB	regulatory asset base
RBA	Reserve Bank of Australia
repex	replacement expenditure
RFM	roll forward model
RIN	regulatory information notice
RPP	revenue and pricing principles
SLCAPM	Sharpe-Lintner capital asset pricing model
STPIS	service target performance incentive scheme
TNSP	transmission network service provider
TUoS	transmission use of system
WACC	weighted average cost of capital

11 Service target performance incentive scheme

The service target performance incentive scheme (STPIS) provides a financial incentive to TNSPs to maintain and improve service performance. The STPIS aims to safeguard service quality for customers that may otherwise be affected as TNSPs seek out cost efficiencies at the expense of service quality. The current version of the STPIS, version 4.1, includes three components: a service component, market impact component and network capability component.¹

The service component provides a financial incentive for TNSPs to improve and maintain their service performance. This balances the incentive in the regulatory framework for TNSPs to reduce costs at the expense of service performance. A TNSP's performance is compared against the performance target for each parameter under the service component during the regulatory control period. The TNSP may receive a financial bonus for service improvements, or a financial penalty for declines in service performance. The financial bonus (or penalty) is limited to 1 per cent of the TNSP's maximum allowed revenue (MAR) for the relevant calendar year.

The market impact component provides financial rewards to TNSPs for improvements in their performance measured against a performance target. A TNSP may earn up to 2 per cent of its MAR for the relevant calendar year. Unlike the service and network capability components, the market impact component has no financial penalty. The market impact component provides an incentive to TNSPs to minimise the impact of transmission outages that can affect the NEM spot price. The market impact parameter measures the number of dispatch intervals when an outage of a TNSP's network results in a network outage constraint with a marginal value greater than \$10/MWh.² The market impact parameter performance target is an average of the previous three years of performance data. Performance will be measured as a rolling average of the most recent two years of performance data.³ These targets will be published annually after we have conducted the annual review of a TNSP's STPIS performance.

The network capability component funds and incentivises TNSPs to identify and implement incremental changes that would improve the capability of the network at times when it is most needed. Except for the final year of the next regulatory control period, a TNSP will receive payment equal to 1.5 per cent of its MAR for each year of its next regulatory control period to fund the priority projects. If a TNSP achieves its priority project improvement target for each priority project, then it will receive an incentive payment of 1.5 per cent of its MAR in the final year. If it does not achieve each priority project target, then we may reduce the incentive payment in the final year.

¹ AER, *Final – Service Target Performance Incentive Scheme*, September 2014.

² AER, *Final – Service Target Performance Incentive Scheme*, September 2014, Appendix C.

³ AER, *Final – Service Target Performance Incentive Scheme*, September 2014, cl 4.2(d) and Appendix F.

We can reduce the final payment to a maximum of – 2 per cent of MAR if the TNSP does not achieve any of its proposed priority project improvement targets.⁴

Our transitional decision set out how the STPIS applies during the 2014–15 transitional year.⁵ According to the transitional rules, we are required to make a corresponding adjustment in the application of the STPIS as a result of any change in MAR determined for the 2015–18 regulatory control period as compared to the MAR determined in our transitional decision.⁶

11.1 Final decision

We will apply all components of version 4.1 of the STPIS to TransGrid for the 2015–18 regulatory control period. We propose to apply the STPIS to TransGrid in accordance with the details set out below.

11.1.1 Service component

We accept TransGrid's proposed performance targets for the service component because they comply with the requirements in clause 3.2 of the STPIS. However, we do not accept TransGrid's proposed caps and collars⁷ as the values of the parameters are not based on a sound methodology and thus do not satisfy clause 3.2(e) of the STPIS. We consider the caps and collars calculated using our principle based approach as discussed in section 11.4.1 will result in a materially stronger incentive to improve and maintain service performance. Table 11.1 sets out our final decision on TransGrid's service component parameter values.

Table 11.1 AER's final decision on TransGrid's parameter values and weightings for the service component of the STPIS

	Collar	Target	Cap	Weighting (% of MAR)
Average circuit outage rate				
Line outage – fault	22.26%	17.86%	12.38%	0.2
Transformer outage – fault	19.01%	14.92%	10.26%	0.2
Reactive plant – fault	22.73%	15.54%	9.54%	0.1
Line outage – forced outage	25.49%	14.98%	1.34%	0.0

⁴ AER, *Final – Service Target Performance Incentive Scheme*, September 2014, cl. 5.3(c).

⁵ For the 2014–15 transitional regulatory control period, we applied version 2 of the Service Component, version 4 of the Market Impact Component (MIC) and version 4 of the Network Capability Component (NCC) to TransGrid.

⁶ NER, cl. 11.56.4 (c), (h) and (i).

⁷ The cap specifies the level of performance that results in a TNSP receiving the maximum financial reward attributed to a parameter; the collar specifies the level for receiving the maximum financial penalty.

	Collar	Target	Cap	Weighting (% of MAR)
Transformer outage – forced outage	24.15%	20.25%	15.56%	0.0
Reactive plant – forced outage	28.55%	20.39%	6.55%	0.0
Loss of supply event frequency				
>0.05 system minutes	4	3	2	0.15
>0.25 system minutes	2	1	0	0.15
Average outage duration				
Average outage duration	266.53	144.49	67.97	0.2
Proper operation of equipment⁸				
Failure of protection system	n/a	n/a	n/a	0.0
Material failure of SCADA	n/a	n/a	n/a	0.0
Incorrect operational isolation of primary or secondary equipment	n/a	n/a	n/a	0.0

Sources: TransGrid, *Revenue proposal 2014/15–2018/19*, p. 226; AER analysis.

11.1.2 Market impact component

As foreshadowed in our transitional transmission determination for TransGrid⁹, we have validated and confirmed the 2011, 2012 and 2013 market impact performance data which was included within TransGrid's 2015–18 revenue proposal. The validation of this performance data allows us to calculate TransGrid's market impact parameter performance target for 2014, being the average of its 2011, 2012 and 2013 annual performance. TransGrid's market impact parameter targets that will apply within the 2015–18 regulatory control period will be published annually as part of our service standards compliance reporting process.¹⁰

As a result of our previous audits, we made adjustments to the market impact performance values submitted by TransGrid. We adjusted TransGrid's 2011 performance from 872 to 870 dispatch intervals, its 2012 performance from 737 to 773

⁸ TransGrid noted the proper operation of equipment parameter was introduced as a reporting-only parameter. As a result, it did not propose values for these sub-parameters, but it will commence reporting against these sub-parameter from July 2015. As we are not applying any weighting on these sub-parameters, we accept the approach proposed by TransGrid.

⁹ AER, *Transitional transmission determination 2014–15*, March 2014, p. 33.

¹⁰ Our annual service standards compliance reports are available at <http://www.aer.gov.au/node/484>.

dispatch intervals and its 2013 performance remained at 593 dispatch intervals. Consequently, TransGrid's market impact performance target for 2014 was calculated to be 745 dispatch intervals.¹¹

We have also completed our audit of the 2014 market impact performance data reported by TransGrid as part of our annual STPIS compliance review.¹² As a result of our audit, we adjusted TransGrid's 2014 performance from 743.5 to 749.5 dispatch intervals. Consequently, TransGrid's market impact performance target for 2015 is 705 dispatch intervals.

11.1.3 Network capability component

We accept TransGrid's proposed priority projects and improvement targets because we consider they meet the requirements of the STPIS. The average total expenditure of the priority projects in each regulatory year is not greater than 1 per cent of TransGrid's proposed average maximum allowed revenue as required by clause 5.2(b) of the STPIS. We considered the AEMO review of TransGrid's priority projects when making our decision. Table 11.2 sets out our final decision on TransGrid's proposed priority projects, improvement targets and project ranking.

Table 11.2 AER's final decision on TransGrid's network capability priority projects (\$ 000s, 2013–14)

Ranking	Project	Description	Improvement target	Capex	Opex	Total
1	Current Transformer Secondary Ratios - Queensland – New South Wales Interconnector	Changes to current transformer secondary ratios on 8C, 8E, 8L and 8M lines.	Full use of line thermal capacity of 1200MVA for 8C and 8E 330kV Armidale - Dumaresq circuits and 8L and 8M Dumaresq - Bulli Creek circuits during system normal conditions.	0	55	55
2	Terminal Equipment	Replace wave traps,	Terminal equipment	360	0	360

¹¹ Regarding the target for the last half of 2014, we pro-rate the performance by measuring the average 2013/2014 performance against the average 2011/2012/2013 target and then multiply by 0.5.

¹² The results of our audit of TransGrid's 2014 market impact performance data as part of our annual STPIS compliance review is available at <http://www.aer.gov.au/node/484?date%5Bvalue%5D%5Byear%5D=§or=All&category=319>.

Ranking	Project	Description	Improvement target	Capex	Opex	Total
	Upgrades - 67 & 68 Murray – Dederang Switchbays	disconnectors and change CT ratios and protection settings on 67 & 68 line switchbays at Murray.	ratings that allow the use of dynamic rating capacity of 1486MVA for 67 & 68 Lines.			
3	Protection & Metering Upgrades - 993 Line Protection & Metering Upgrade	Replace the secondary systems panel for 993 Line at Wagga 330 substation.	Full use of contingent capacity of 122 MVA for 993 Line.	90	0	90
4	Dynamic Line Ratings & Transmission Line Uprating - 83 Liddell – Muswellbrook, 84 Liddell – Tamworth 330, 85 & 86 Tamworth 330 – Armidale & 88 Muswellbrook – Tamworth 330 330kV Lines	Install dynamic line ratings based on real time ambient temperatures and wind speeds on 83, 84, 85, 86 and 88 Lines.	Improved rating information based on real time ambient temperature and wind speed for these lines, which will allow increased line ratings of approximately 20 per cent at times of favourable conditions.	1,100	0	1,100
5	Protection & Metering Upgrades - 99P Line Protection & Metering Upgrade	Change to CT ratios at Gadara. (The change to CT ratios at Tumut will be undertaken as part of the secondary systems replacement project at Tumut.)	Full use of contingent capacity of 128 MVA for 99P Line.	0	50	50
6	Dynamic Line Ratings & Transmission Line Uprating - 65 Murray –	Install dynamic line ratings based on real time ambient temperatures and	Improved rating information based on real time ambient temperature and	400	0	400

Ranking	Project	Description	Improvement target	Capex	Opex	Total
	Upper Tumut & 66 Murray – Lower Tumut 330kV Lines	wind speeds on 65 and 66 Lines.	wind speed for these lines, which will allow increased line ratings of approximately 20 per cent at times of favourable conditions.			
7	Control Schemes - Extension of Directlink Tripping Scheme	Extend the Directlink emergency tripping scheme to include the transformers at Lismore 330kV substation, 872B bay at Armidale and 872A, 872B and 892A bays at Coffs Harbour.	Full use of line capacity of the Directlink Interconnector during outages of the Lismore transformers, 872B bay at Armidale or 872A, 872B and 892A bays at Coffs Harbour	600	0	600
8	Protection Changes - 976 Line Configuration & Protection Changes	Install disconnecter at Yass substation and change protection settings at Canberra, Yass and Queanbeyan.	Reduced likelihood of loss of supply to Queanbeyan for a second contingency. This includes a reduction in recall times for 976/1 and 976/2 Lines.	110	0	110
9	Terminal Equipment Upgrades - 94E Mt Piper 132 – Wallerawang 132 Switchbays	Replace interplant connections and change current transformer secondary ratios on the 94E Line switchbay at Wallerawang 132.	Full use of contingent capacity of 373 MVA for 94E Line.	50	0	50
10	Dynamic Line Ratings &	Install dynamic line ratings based	Improved rating information	1,000	0	1,000

Ranking	Project	Description	Improvement target	Capex	Opex	Total
	Transmission Line Uprating - Northern 132kV System	on real time ambient temperatures and wind speeds on 967, 96R, 96T and 966 Lines.	based on real time ambient temperature and wind speed for these lines, which will allow increased line ratings of approximately 20 per cent at times of favourable conditions.			
11	Dynamic Line Ratings & Transmission Line Uprating - Snowy – Yass & Canberra 330kV Lines	Install dynamic line ratings based on real time ambient temperatures and wind speeds on 01,2,3 and 07 Lines.	Improved rating information based on real time ambient temperature and wind speed for these lines, which will allow increased line ratings of approximately 20 per cent at times of favourable conditions.	1,400	0	1,400
12	Control Schemes - Northern Reactive Plant Control Scheme	The installation of a reactive equipment controller with the capability to control reactive equipment at Armidale 330kV Substation. The installation of emergency overvoltage and under voltage controls on reactive equipment at Armidale 330kV Substation and Dumaresq 330kV	Operating of automatic reactive equipment control at Armidale Substation. Operation of emergency voltage control of QNI reactive equipment at Armidale and Dumaresq Substations.	524	0	524

Ranking	Project	Description	Improvement target	Capex	Opex	Total
		Switching Station.				
13	Dynamic Line Ratings & Transmission Line Uprating - 4 & 5 Yass – Marulan, 9 Yass – Canberra, 61 Yass – Bannaby & 39 Bannaby – Sydney West 330kV Lines	Install dynamic line ratings based on real time ambient temperatures and wind speeds on 4,5,9,61 and 39 Lines. Increase the height of transmission line conductor on 61 Line to achieve a maximum operating temperature of 100 degrees Celsius.	Improved rating information based on real time ambient temperature and wind speed for these lines, which will allow increased line ratings of approximately 20 per cent at times of favourable conditions. The increase in maximum operating temperature of 61 Line is expected to achieve an increase in contingency rating of this line of 137 MVA.	2,600	0	2,600
14	Dynamic Line Ratings & Transmission Line Uprating - 969 Tamworth 330 – Gunnedah 132kV Line	Install dynamic line ratings based on real time ambient temperatures and wind speeds on 969 Line.	Improved rating information based on real time ambient temperature and wind speed for this line, which will allow increased line ratings of approximately 20 per cent at times of favourable conditions.	300	0	300
15	Terminal Equipment Upgrades - 81 & 82 Liddell –	Replace interplant connections on 81 & 82 Line	Full use of contingent capacity of 1646 MVA for 81 & 82	600	0	600

Ranking	Project	Description	Improvement target	Capex	Opex	Total
	Newcastle & Tomago Lines	switchbays at Liddell and Newcastle, and replace wave traps and change current transformer secondary ratios at Liddell.	Lines.			
16	Capacitor Banks - Beryl Capacitor Bank	Install a new capacitor bank at Beryl 132kV Substation.	The installation of a capacitor bank at Beryl substation would increase the total capacity available to the area by 6 MW in 2016. This additional capacity will reduce with load growth over time due to voltage constraints.	1,900	0	1,900
17	Travelling Wave Fault Location - Snowy Lines	Install travelling wave fault locators on Snowy lines.	Commissioning of the travelling wave fault locators on the above lines.	2,211	0	2,211
18	Travelling Wave Fault Location - North Western 132kV System	Install travelling wave fault locators on the above lines.	Commissioning of the travelling wave fault locators on the above lines.	877	0	877
19	Travelling Wave Fault Location - Northern 330kV Lines	Install travelling wave fault locators on the above lines.	Commissioning of the travelling wave fault locators on the above lines.	1,895	0	1,895
20	Travelling Wave Fault Location - Far North Coast 330kV and	Install travelling wave fault locators on the above lines.	Commissioning of the travelling wave fault locators on the	890	0	890

Ranking	Project	Description	Improvement target	Capex	Opex	Total
	132kV System		above lines.			
21	Quality of Supply - Point-on-Wave Switching for 132kV Capacitor Banks	Replace standard circuit breakers with point-on-wave circuit breakers.	Installation of point-on-wave switching on 3 capacitor banks.	631	0	631
22	Quality of Supply - Point-on-Wave Switching for 66kV & Below Capacitor Banks	Replace standard circuit breakers with point-on-wave circuit breakers.	Installation of point-on-wave switching on 24 capacitor banks.	4,500	0	4,500
23	Research Projects - Behaviour of Residential Solar During System Events	Install high speed monitors on connection points with significant penetration of residential solar installations, and fault recorders at locations representative of various load types.	Installation and commissioning of high speed monitors and fault recorders at various representative connection points.	1,850	0	1,850
24	Travelling Wave Fault Location - Southern 330kV Network	Install travelling wave fault locators on 63 and 51 Lines.	Commissioning of the travelling wave fault locators on the above lines.	1,347	0	1,347
25	Travelling Wave Fault Location - Western 220kV Network	Install travelling wave fault locators on the western 220kV network.	Commissioning of the travelling wave fault locators on the above lines.	877	0	877
26	Remote Information - Remote Interrogation of Protection Relays	Install remote interrogation of protection relays at 13 substations and commission production servers.	Remote interrogation of protection relay information from 13 substations operational.	1,000	0	1,000
27	Communications - Communications	Installation of suitable bandwidth	Commissioning of the communication link to Albury, ANM and Hume	4,200	0	4,200

Ranking	Project	Description	Improvement target	Capex	Opex	Total
	to Albury, ANM & Hume Substations	communications for SCADA to Albury, ANM and Hume substations.	substations.			
28	Research Projects - Energy Storage	Install a pilot energy storage device in the Sydney area.	Installation and commissioning of an energy storage device to trial the concept.	4,900	0	4,900
Total				36,215	105	36,317

Source: TransGrid, *Network Capability Incentive Parameter Action Plan 2014/15 – 2017/18*, pp. 9-10.

11.2 TransGrid's revised proposal

TransGrid's revised revenue proposal accepted our draft decision on all components of the STPIS.¹³

11.3 AER's 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.¹⁴ In turn, the annual building block revenue requirement must be determined using a building blocks 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).¹⁵ As set out above, we have assessed TransGrid's proposal against the requirements of the STPIS version 4.1.

11.3.1 Service component

As in our draft decision, we assessed whether TransGrid's proposed performance targets, caps and collars comply with the STPIS requirements for:¹⁶

- average circuit outage rate, with six sub parameters¹⁷
- loss of supply event frequency, with two loss of supply event sub-parameters¹⁸

¹³ TransGrid, *Revised revenue proposal 2014/15–2017/18*, 13 January 2015, p.148.

¹⁴ NER, cl. 6A.4.2(a)(2).

¹⁵ NER, cll. 6A.5.4(a)(5), 6A.5.4(b)(5) and 6A.7.4.

¹⁶ AER, *Final – Service Target Performance Incentive Scheme, September 2014*, clause 3.2.

¹⁷ Six parameters include line outage – fault, transformer outage – fault, reactive plant – fault, line outage – forced outage, transformer outage – forced outage and reactive plant – forced outage.

- average outage duration
- proper operation of equipment, with three sub-parameters¹⁹:

We must accept TransGrid's proposed parameter values if they comply with the requirements of the STPIS. We may reject them if they are inconsistent with the objectives of the STPIS.²⁰ We measure actual performance for the 'average circuit outage rate' and 'average outage duration' parameters on a two year rolling average basis in accordance with appendix E of the STPIS.

We assessed TransGrid's service component proposal against the requirements of the STPIS — that is, whether:

- TransGrid'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 STPIS²¹
- the proposed performance targets were equal to the average of the most recent five years of performance data²²
- any adjustments to the proposed targets are warranted and reasonable²³
- TransGrid used a sound methodology, with reference to the performance target, to calculate the proposed caps and collars,²⁴ and
- any adjustment to a performance target was applied to the cap and collar of that parameter.²⁵

We assessed the distributions used by TransGrid to calculate caps and collars to determine whether a sound methodology was used.

11.3.2 Market impact component

We have audited TransGrid 2011, 2012, 2013 and 2014 market impact performance data using the following approach:

- independently calculating (using AEMO data) the number of dispatch intervals related to binding outage constraints and validating that the outages were attributable to the TNSP

¹⁸ They are frequency of events when loss of supply exceeds 0.10 system minutes and frequency of events when loss of supply exceeds 1.00 system minutes.

¹⁹ They are failure of protection system, material failure of SCADA system and incorrect operational isolation of primary or secondary equipment.

²⁰ AER, *Final – Service Target Performance Incentive Scheme, September 2014*, cl. 3.2.

²¹ AER, *Final – Service Target Performance Incentive Scheme, September 2014*, cl. 3.2(d).

²² AER, *Final – Service Target Performance Incentive Scheme, September 2014*, cl. 3.2(g).

²³ AER, *Final – Service Target Performance Incentive Scheme, September 2014*, cl. 3.2(k).

²⁴ AER, *Final – Service Target Performance Incentive Scheme, September 2014*, cl. 3.2(e).

²⁵ AER, *Final – Service Target Performance Incentive Scheme, September 2014*, cl. 3.2(e).

- searching AEMO Market Notices to confirm the validity of TNSP's classification of constraints as outage related, and
- cross-checking network outage request information provided by AEMO to confirm the classification of constraints as outage related.

11.3.3 Network capability component

As part of its revenue proposal, TransGrid submitted a network capability incentive parameter action plan (NCIPAP).²⁶ This plan must identify the reason for limits on each transmission circuit and injection point in the network. It must also list proposed priority projects and project improvement targets that TransGrid will undertake in the 2014–18 period (including the 2014–15 transitional year) to improve the capability of the transmission circuits and injection points. We must approve a priority project if it is consistent with the requirements of the STPIS.²⁷

As in our draft decision, we assessed TransGrid's network capability component proposal against the requirements under clause 5.2 of the STPIS — that is, whether TransGrid's NCIPAP has identified:

- for every transmission circuit or injection point on its network, the reason for the limit for each transmission circuit or injection point
- the total operational and capital cost of each priority project
- the proposed value of the priority project improvement target of each priority project
- the current value of the limit for the transmission circuits and/or injection points which the priority project improvement target is seeking to improve
- the ranking of the priority projects in descending order based on the likely benefit of the priority project on customers or wholesale market outcomes.

Clause 5.2(b) of the STPIS also requires the average total expenditure of the priority projects outlined in each regulatory year must not be greater than 1 per cent of the TNSP's average maximum allowed revenue proposed in its revenue proposal for the regulatory control period.

The priority project improvement target must result in a material benefit and the proposed priority project capital expenditure needs to meet the definition of minor capital expenditure for the purposes of the NCIPAP. The cost of the proposed priority projects must not be included in the total forecast operating or capital expenditure by the TNSP in its revenue proposal. The TNSPs must consult with AEMO prior to submitting its NCIPAP.

²⁶ AER, *Final – Service Target Performance Incentive Scheme, September 2014*, cl. 5.2(b).

²⁷ AER, *Final – Service Target Performance Incentive Scheme, September 2014*, cl. 5.2.

We also considered information provided by AEMO in determining the benefits of the proposed priority project improvement targets and whether the net benefit of each project resulted in a material benefit.²⁸

11.3.4 Interrelationships

The NER requires the STPIS to take into account any other incentives provided for in the Rules that TNSPs have to minimise capital or operating expenditure.²⁹ 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.³⁰

The STPIS allows us to adjust the performance targets of the service component 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.³¹ We consider planned reliability improvement works in setting the performance targets of the service component.

11.4 Reasons for final decision

The following section sets out our considerations in applying the STPIS to TransGrid for the 2015–18 regulatory control period.

11.4.1 Service component

TransGrid is subject to version 4.1 of the STPIS for the next regulatory control period. The new version includes a parameter called 'average circuit outage rate' introduced in version 4 of the STPIS. This parameter replaced the 'transmission circuit availability' parameter under previous versions of the STPIS.

Performance targets

Performance targets must equal the TNSP's average performance history over the past five years unless they are subject to adjustment under clause 3.2(h) or (k) of the STPIS.³² We generally approve performance targets that are the arithmetic mean of the past five years' performance data. TransGrid followed this approach for its proposed performance targets. Sub-clauses 3.2(h) and (k) of the STPIS, however, do allow us to set performance targets based on a different period and to make reasonable adjustments to the performance targets respectively.

²⁸ AER, *Final – Service Target Performance Incentive Scheme, September 2014*, cl. 5.2(c).

²⁹ NER, cl. 6A.7.4(b)(5) of the NER.

³⁰ AER, *Final – Service Target Performance Incentive Scheme, September 2014*, cl. 1.4.

³¹ AER, *Final – Service Target Performance Incentive Scheme, September 2014*, cl. 3.2(k).

³² AER, *Final – Service Target Performance Incentive Scheme, September 2014*, cl. 3.2(g).

In its submission on TransGrid's revised proposal and our draft decision, the CCP reiterated that capital expenditure approved in previous regulatory control periods has resulted in excess capacity that assist TransGrid in significantly exceeding the requirements of current reliability standards.³³ Likewise, the EMRF reiterated its concerns that increases in replacement capital expenditure should result in improved service performance.³⁴

We acknowledge the concerns raised in these submissions but note, as we did in our draft decision, that our approved capex and opex expenditure for TransGrid reflects its current reliability performance and not improvements to performance. Further, the STPIS is an incentive scheme which provides that TransGrid can only retain rewards for sustained and continuous improvement. Once improvements are made, it would be expected that performance targets will be strengthened to reflect that fact.³⁵ Therefore, we consider it appropriate to set TransGrid's performance targets based on its average performance history over the past five years without adjustment.

Caps and collars

Proposed caps and collars must be calculated with reference to the proposed performance targets using a sound methodology.³⁶ In the past, we have generally accepted approaches that use five years of performance data to derive a statistical distribution, with the caps and collars set at two standard deviations either side of the mean (if using a normal distribution), or at the 5th and 95th percentiles (if using a distribution other than the normal distribution).

The distribution selected to calculate the caps and collars for a particular parameter must be conceptually sound. We have established the following principles for selecting a distribution to calculate caps and collars:³⁷

- 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

³³ CCP, *Consumer Challenge Panel (CCP6 Sub Panel) Submission on TransGrid Determination and Revised Revenue Proposal*, 6 February 2015, p. 47.

CCP, *Consumer Challenge Panel (CCP6 Sub Panel) Submission on TransGrid Revenue Proposal*, 8 August 2014, p.3 &.9.

³⁴ EMRF, *Submission on TransGrid's Revised Revenue Proposal*, January 2015, p 61.

EMRF, *Submission on TransGrid's Revenue Proposal*, July 2014, pp 77-78.

³⁵ AER, *Draft Decision: TransGrid revenue determination*, November 2014, p. 11-27.

³⁶ AER, *Final – Service Target Performance Incentive Scheme*, September 2014, cl. 3.2(e).

³⁷ AER, *Draft decision, SP AusNet Transmission determination 2014–15 to 2016–17*, August 2013, pp. 184-185.

calculating caps and collars for loss of supply sub-parameters. Continuous distributions should not be used.

In its revised proposal, TransGrid proposed the caps and collars set out in our draft decision³⁸. Table 11.3 sets out the caps and collars derived from our preferred approach as set out in our draft decision. For the reasons in our draft decision,³⁹ we consider our approach is conceptually sound and our calculated caps and collars provide a materially stronger incentive for TransGrid to improve and maintain its service performance.

Table 11.3 Caps and collars derived from our preferred method

Parameter	Distribution	Cap (5th percentile)	Collar (95th percentile)
Average circuit outage rate			
Line outage – fault	Weibull	12.38%	22.26%
Transformer – fault	Weibull ⁴⁰	10.26%	19.01%
Reactive plant – fault	Gamma	9.54%	22.73%
Line outage – forced	Uniform	1.34%	25.49%
Transformer outage – forced	Weibull	15.56%	24.15%
Reactive plant – forced	Triangular	6.55%	28.55%
Loss of supply events			
> 0.05 system minutes	IntUniform ⁴¹	2	4
>0.25 system minutes	Poisson	0	2
Average outage duration			
Average outage duration	LogLogistic	67.97	266.53

Source: AER analysis.

³⁸ AER, *Draft Decision: TransGrid revenue determination*, November 2014, pp. 11-28 & 11-29.

³⁹ AER, *Draft Decision: TransGrid revenue determination*, November 2014, pp. 11-19 – 11-21.

⁴⁰ Although BetaGeneral distribution provides the lowest K-S distance statistic, it lacks A-D convergence as it requires 4 parameters and we only have 5 observations. We used Weibull distribution instead as it provides the second lowest K-S distance statistic.

⁴¹ The calculated cap is 3 using the IntUniform distribution, which is equal to the corresponding performance target. However, this results in an illogical outcome because TransGrid could receive a financial reward for simply meeting but not exceeding its target. Therefore we have adjusted the cap to 2 events.

11.4.2 Market impact component

Our audit of TransGrid's 2011, 2012 and 2013 market impact performance data resulted in a number of adjustments which were set out in our draft decision.⁴² We have also completed our audit of TransGrid's 2014 market impact performance data as part of our annual STPIS compliance review. Our review resulted in the adjustments shown in Table 11.4.

Table 11.4 AER adjustments to TransGrid's 2014 market impact component performance data

Constraint	AER adjustment	AER reason for adjustment
S:V_420	+2	Constraint invoked to manage a network outage.
F_Q++ARDM_L60	+4	Auto reclose failure at Powerlink's Bulli Creek substation

Source: TransGrid emails to AER dated 29 January 2015.

Given the above adjustments, we revised TransGrid's 2014 performance from 743.5 to 749.5 dispatch intervals. Consequently, TransGrid's market impact performance target for 2015 is 705 dispatch intervals.

11.4.3 Network capability component

We consider that TransGrid in consultation with AEMO, undertook a robust process to identify network constraints. Based on AEMO's assessment and our review of TransGrid's proposal, we accept TransGrid's proposed priority projects and priority project improvement targets as submitted on 30 May 2014.

In reaching our conclusion, we had regard to the following submissions.

The EMRF were critical of the inclusion of specific projects as NCIPAP priority projects for reasons including excessive payback periods and inefficiency.⁴³ Norske Skog Albury Mill (NSA) also expressed concerns that several projects did not represent an efficient allocation of resources and that TransGrid will benefit from several projects with short payback at the expense of consumers.⁴⁴

We note these concerns, which we addressed in our draft decision:⁴⁵

In developing version 4 of the STPIS, we noted there are a range of factors that may limit the capability of assets and therefore the ability of those assets to

⁴² AER, *Draft Decision: TransGrid revenue determination*, November 2014, pp. 11-31 & 11-32.

⁴³ EMRF, *Submission on AER Draft Decision and TransGrid revised proposal*, January 2015, pp.12 & 64.

⁴⁴ Norske Skog Albury Mill, *Response to the AER's TransGrid draft determination and to TransGrid's revised application*, 6 February 2015, p.7.

⁴⁵ AER, *Draft Decision: TransGrid revenue determination*, November 2014, pp. 11-32 –11-34.

deliver peak load and facilitate the efficient dispatch of generation in the market. We considered TNSPs are best placed to identify limitations in their networks and implement low cost solutions to address those limitations for the benefit of consumers. However, we recognised that the existing regulatory framework did not incentivise this behaviour.⁴⁶ The NCC is aimed to incentivise increased capability of existing assets in the network when needed most. It does this by requiring TNSPs to reveal the existing capability of their networks and to identify low cost projects to increase network capability that would provide greater value to generators and consumers. Generators benefit from improved capability because there is a lower risk of their generation dispatch being constrained, which is ultimately passed onto consumers through lower wholesale electricity prices. The NCC incentivises TNSPs to improve ability of their networks to meet peak demand without additional major augmentation capital expenditure, which also translate to lower prices for consumers.

The purpose of the annual NCC incentive payment is to fund the implementation of NCIPAP projects. If the approved NCIPAP is comprised of projects totalling approximately 1 per cent of the MAR, the TNSP will receive an incentive of around 0.5 per cent of its MAR. We acknowledge some of TransGrid's proposed priority projects have estimated payback period well in excess of 5 years. However, based on AEMO's assessment and our review, we consider those proposed priority projects still result in material benefits in accordance with clause 5.2(l) of the STPIS. Given the design of the current STPIS, the inclusion of such projects in the NCIPAP (up to a maximum of 1 per cent of the proposed MAR) will benefit consumers, provided they result in a net benefit. This is because the incentive payment under the NCC is set at 1.5 per cent of MAR each year irrespective of the total cost of the approved NCIPAP projects.

As we set out in our draft decision, we have determined that TransGrid's proposed priority projects and priority project improvement targets are consistent with the STPIS and will lead to a material benefit.⁴⁷ We note the average total expenditure of the priority projects in each regulatory year is not greater than 1 per cent of TransGrid's proposed average maximum allowed revenue as required by clause 5.2(b) of the STPIS. The priority project rankings and targets are set out in Table 11.2.

⁴⁶ AER, *Explanatory statement – Electricity transmission network service providers, Draft service target performance incentive scheme*, September 2012, p.35.

⁴⁷ AER, *Final – Service Target Performance Incentive Scheme*, September 2014, clause 5.2.