Audit of SP AusNet Service Standards Performance Reporting

PERFORMANCE RESULTS FOR 2005

- Final Report
- 21 March 2006

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1. Executive Summary

Sinclair Knight Merz (SKM) was engaged by the Australian Energy Regulator (AER) to conduct an audit of the year 2005 performance report of SP AusNet (transmission) based on the service standards established under the AER document "Decision – Victorian Transmission Network Revenue Cap 2003-2008".

The audit concentrated on a review of the performance results submitted by SP AusNet, in particular:

- the adequacy and accuracy of the recording system used to measure performance and a review of any changes since previous audits
- the accuracy of the calculations of the final performance; and
- the force majeure events and other exclusions to ensure compliance with the revenue caps decision and AER service standards guidelines.

As the auditor, SKM met with SP AusNet staff in Melbourne on Thursday 2nd February 2006, to review their data, systems and processes for gathering and processing outage information. The integrity of the system established by SP AusNet for retrieving data from the MAXIMO maintenance system for reporting under the AER service standards was audited. In addition, specific events were reviewed to examine any particular issues associated with the claim for exclusion.

As a result of audit activities undertaken, Sinclair Knight Merz has formed an opinion that:

- the performance reporting by SP AusNet was free from material errors and in accordance with the requirements of the AER service standards guidelines, subject to clarification of the definition of some exclusions noted;
- SP AusNet has correctly applied the AER performance incentive model that contain the S-factor equations and coefficients defined in the revenue cap decision to calculate the S-factors, subject to observations made in this report;
- the recording system used by SP AusNet to capture the relevant details for outages is accurate and reliable;
- the categorisation of assets within the MAXIMO maintenance system is appropriate and consistent with the categorisation under the AER service standards for critical and non-critical assets;
- the audit of the interface programs between MAXIMO and the performance reporting files found the transfer of data to be accurate and complete;

- the application of exclusions was generally in accordance with historical calculation of performance, which SKM audited and agreed that it formed the basis of the performance targets for the current regulatory period;
- the exclusion of VENCorp augmentation and "3rd party" events from the performance measures is not in accordance with the original SKM report[1], and it is different treatment compared to other TNSP under the AER Service Standards Scheme.
- the exclusions for the specified events relating to shunt reactors is in accordance with historical performance reporting based on good operational practice.

SKM recommends:

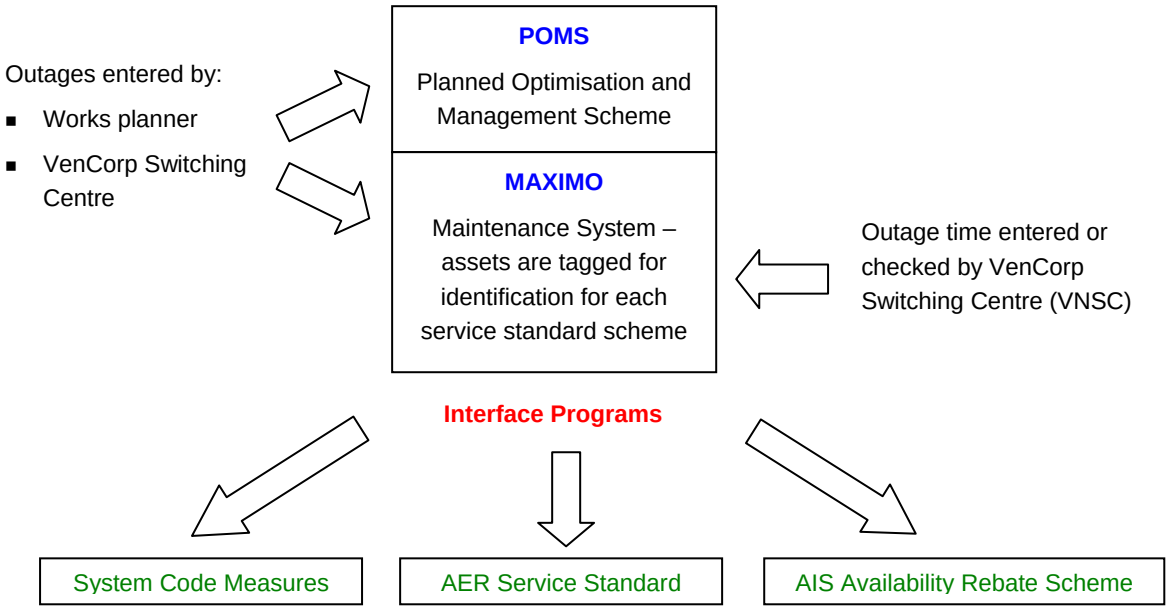
- SP AusNet's calculation of its S factor be accepted as free from material errors, subject to the AER's acceptance of the exclusions recommended by SKM;
- The AER accept SP AusNet's exclusion of shunt reactors, on the basis that the outage was conducted in accordance with good operational practice; and
- The S-factors for SP AusNet under the AER service standards for 2005 be **0.094497% of the agreed Annual Revenue for 2005**.

[1] QM43502 – Transmission Network Service Provider (TNSP) – Service Standards

2. Recording System

An overview of the SP AusNet outage management systems is shown in Figure 2-1.

- **Figure 2-1 Outage Management Systems**



The POMS module became fully operational in November / December 2003, and is a planned / unplanned maintenance support package which is intended to ensure that maintenance is arranged to meet the goals of the service standards schemes.

For each planned or unplanned outage, a Works Order is initiated through POMS, detailing the known details of any fault and the nature of work required. A mandatory field has been added to the Works Order so that the reason for the outage is coded (refer section 3.3). This field offers a drop down selection of coding options from which the planner makes a selection. The coding for Works Orders is reviewed daily by the Works Planning Manager to ensure it is appropriate.

In the MAXIMO maintenance system, each system element has been tagged with identification codes to identify whether it is critical or non-critical to facilitate for reliable data processing. The outage details from POMS are combined with the asset tags to provide a single source of data for reporting to the different performance schemes and statistics as required by the Victorian System Code and Network Agreement with VenCorp.

2.1 Outage Details

For each system outage, there is a System Outage Request form accompanied by a Switching Log and Permits form. The switching times are recorded by the VNSC controller and transferred to the relevant Works Order in MAXIMO.

2.2 Categorisation and Exclusions

Dependent upon the outage reason code applied to the Works Order, the event may be excluded from consideration under the AER service standards.

Maintenance staff through the POMS system enter the categorisation for an outage at the time of signing off the Work Order. The coding of the event is mandatory, and Works Orders cannot be closed without this information being supplied. The Works Planning Manager and other senior staff review the coding to ensure that the reason for each event has been correctly categorised.

2.3 Processing of Outage Data

SP AusNet has developed an interface program that extracts relevant data from MAXIMO into an Excel spreadsheet for processing performance result information under the AER service standards. This interface program was developed during 2003/04, and since then there have been several improvements and modifications made to the program. All the data used for the 2005 performance measure report was extracted using this interface program.

MAXIMO is the single source of database for reporting performance to the AER service standards scheme. The Excel file for the AER service standards results imports data from MAXIMO into a spreadsheet, and then processes the data using Visual Basic to filter only those events that have not been excluded for one reason or another. Within the Excel file, there is a spreadsheet where peak, intermediate and off-peak times are determined, dependent upon the time of year. The information is summarised on a separate spreadsheet where the times in peak / intermediate / off-peak periods are calculated for each event, together with the contribution of each event towards the results of measures 1 and 3.

2.4 Calculation of Performance Measure Results

The performance measure results are calculated using the AER performance incentive model that contains S-factor equations defined in the SP AusNet revenue caps decision. The results are collated into a graph (Appendix A) illustrating the S-factors proposed by SP AusNet and that recommended by SKM.

2.5 Recent Enhancements to Recording System

Following the initial audit of the recording system in 2003, a number of improvements were made to the recording and reporting tools, and business process. The net result of these changes is to allow SP AusNet to better manage its outages with least impact on the transmission system.

SP AusNet advised SKM that there is no integration or change to the existing recording system as a result of the merger with TXU in late 2005.

2.5.1 MAXIMO / POMS

In reviewing the recording system, SKM noted that SP AusNet has upgraded MAXIMO from Version 4.1.1 to Version 5.2. The transition was successfully completed in March 2005 with minimum impact to work and outage management systems. SKM observed a few key changes in this upgrade as follows:

- Migration to a Web based application which provides wider access to users across the organisation;
- Enhance the flexibility to build in extra fields to store additional data; and
- Incorporate a System Incident Reporting (SIRs) for issuance of a draft report to VenCorp immediately after any fault incidents.

The SIRs database built in MAXIMO has enabled seamless integration of SIRs to 'fault' and 'force' switching activity records in the relevant work order and this has further enhanced the ability to introduce an extra level of cross checking to ensure outage data is not inadvertently missed and that it is accurate.

2.5.2 AER Performance Excel spreadsheet

The overall accuracy of the spreadsheet was improved by reducing the rounding off of some results, together with the correction of some minor macro coding errors. There was also a noted improvement in the automation of the process and handling of invalid data.

2.5.3 Business Process

The operational impact of the AER service standards was enhanced by the following changes in business practices:

- The Works Planning Manager was provided access to the program to allow for daily reporting to monitor progress and for use in forward planning;
- During 2004, SP AusNet personnel were educated in the AER requirements and the impact that the Scheme may have on performance targets by the production of a AER service standards[2] booklet;
- Changes were made to the planning process so that planned outages have least impact on the network, particularly in peak periods; and
- Changes in operational processes for workflow control so that unplanned outages may be returned to service more quickly.

2.6 System Audit Findings

During 2005, there were 1265 events that were subject to the AER service standards. In 2003, SKM conducted sample testing of about thirty (30) random System Outage Requests from control room paper records to ensure that these events were correctly recorded in MAXIMO and correctly transferred to the Excel file for processing. In general, the events, reasons, and switching times were found to have been correctly recorded, accurately transferred to the Excel file and correctly processed for peak / off-peak hours.

Similar random checks in excess of thirty (30) records were carried out for the 2005 audit. The recording system was found to be satisfactory, and it appeared that with modifications for the enhancements, including the upgrade of MAXIMO to Version 5.2, the integrity of the recording system remained sound.

SKM also reviewed more than twenty sample entries in the event list, and was satisfied that for each event, a code had been entered for the outage, and that the outage reason was in accordance with historical reporting practices.

There are a number of work orders identified with minor data entry error which SP AusNet has later on corrected in MAXIMO. SKM verified that these corrections are related to time entry and are events categorised for exclusion, and therefore have no material impacts on the performance results reported.

[2] Previously ACCC Performance Incentive (PI) Scheme

SP AusNet has created two additional outage codes – EXCAPX and EXMAINT, for the purpose of recording the outage of shunt reactors for exclusion. More information regarding the exclusion sought for the outage of shunt reactors is documented in section 3.7.

The functionality of the Excel file and the associated Visual Basic code has been subjected to exhaustive testing by both internal SP AusNet staff and contractors. In 2003, SKM reviewed the operation of some of the Visual Basic modules, and was satisfied that they appeared to function correctly. The arithmetic functions on the Excel spreadsheets was checked and found to be had been correctly applied.

SKM noted that the integrity of the performance statistics published both internally and externally is enhanced by the MAXIMO / POMS system as a single source of performance data. The current audit found that there is integration of the AER service standards into MAXIMO and that the events are properly accounted for.

SKM is satisfied that the recording and data processing systems that have been put in place by SP AusNet appear to accurately log and calculate performance.

3. Exclusions

The Victorian Transmission Network Revenue Caps (2003-2008) established a set of provisions for certain defined events to be excluded from calculated outage figures. These provisions are provided in section 3.1.

3.1 Exclusions defined under Revenue Caps Decision

The exclusions defined under the Victorian Transmission Network Revenue Caps (2003-2008) are as follows:

Measure 1 Transmission Circuit Availability	1.1 Exclude unregulated transmission assets. 1.2 Exclude connection assets 1.3 Exclude from 'circuit unavailability' any outages shown to be caused by a fault or other event on a '3rd party system' e.g. intertrip signal, generator outage, customer installation (TNSP to provide list) 1.4 Force majeure events
Measure 2 Loss of Supply Event Frequency Index	2.1 Exclude unregulated transmission assets (e.g. some connection assets) 2.2 Exclude any outages shown to be caused by a fault or other event on a 'third party system' e.g. intertrip signal, generator outage, customer installation 2.3 Planned outages 2.4 Force Majeure events
Measure 3 Average Outage Duration	3.1 Planned outages 3.2 Excludes momentary interruptions (< 1 minute) 3.3 Force majeure events
Measure 4 Hours of Binding Constraints (Intra-regional)	4.1 Exclusions Hours of binding constraints at or near (>95 percent) the capacity determined by the constraint equation describing all transmission elements in service 4.2 Excludes connection assets 4.3 Hours of binding constraints where non-credible generation contingencies coincide with previously notified planned outages 4.4 Force majeure events
Measure 5 Hours of Binding Constraints (Inter-regional)	5.1 Exclusions Hours of binding constraints at or near (>95 percent) the capacity determined by the constraint equation describing all transmission elements in service 5.2 Hours of binding constraints where non-credible generation contingencies coincide with previously notified planned outages 5.3 Any event which was clearly as a consequence of action or inaction of another TNSP 5.3 Force majeure events

3.2 Exclusions proposed by SP AusNet during revenue cap application

Attachment G of the Victorian Transmission Network Revenue Caps Decision (2003-2008) contains a list of specified exclusions proposed by SP AusNet. These exclusions are those that have applied to SP AusNet over recent years, and underpin the historical data used in establishing targets under the AER service standards scheme.

These exclusions are:

- Any outage caused by a fault, outage request or other event on a 3rd party system connected to the TNSP's Network
- An outage which occurs within a period a connected person (high voltage customer) does not require the supply of electricity directly or indirectly from the High Voltage Grid, where that outage does not affect the supply of electricity to any other person.
- An outage which is requested by VENCorp or a 3rd party to enable VENCorp or a 3rd party to augment the High Voltage Grid, or conduct tests on the High Voltage Grid, either itself or through a contractor
- Any outage requested by a 3rd party for construction or demolition activities on land over which the TNSP has an easement
- An outage requested by NEMMCO except where the reason for that request is an act or omission of SP AusNet
- A full or partial failure of Brunswick Terminal Station to Richmond Terminal Station 220 kV Cable system that is caused by damage to a part of the cable that is not on SP AusNet site and is caused by someone other than SP AusNet
- In relation to a loss of a double circuit tower, exclude the outage of one circuit following the restoration into service of the other circuit
- Force majeure events

In response to the draft report, AER requested SKM to review the use of exclusions adopted by SP AusNet's in this audit because these exclusions, largely based on the above list, may not fully represent the guidelines stated in the revenue caps decision (2002). While the ACCC did base some of the performance targets on information collected by VENCorp through their AIS scheme when it established SP AusNet's service standards scheme, the ACCC did not accept that the ACCC Service Standard Scheme must mirror perfectly the VENCorp scheme. Instead, the ACCC established its own unique scheme which is outlined in the revenue caps decision (2002) and clarified in the AER's Service Standards Guidelines.

Based on AER's request, SKM reviewed the outage code applied by SP AusNet for the excluded events claimed in 2005 and formed an opinion that they are in general conformance with the exclusions defined under the revenue caps decision (2002). There appeared to be no fundamental difference between the exclusions adopted by SP AusNet and the exclusions defined under the revenue caps decision, with the exception of exclusion claimed under the augmentation works funded by VENCorp and carried out by SP AusNet or its agents (see outage reasons[3] in Table 3-3). The treatment of this exclusion is explained in section 3.5 in more details.

There is also the exception of the 3rd party exclusion which is discussed in section 3.6.

3.3 Categorisation of 2005 events

Table 3-1 summarises the overall results by included and excluded events, *including* the consideration of out of service assets (refer section 3.4).

Table 3-1 Summary of total hours for included and excluded events

Categorisation	Total Hours		Peak Hours		Intermediate Hours		Off-peak Hours	
All Included Events	26,599	30%	1,528	18%	3,360	37%	21,712	31%
All Excluded Events	61,551	70%	6,744	82%	5,814	63%	48,993	69%
Total	88,150	100%	8,272	100%	9,174	100%	70,705	100%

[3] SP AusNet outage code for this exclusion is VEN_AUG

Table 3-2 summarises the overall results by included and excluded events, *excluding* the consideration of out of service assets (refer section 3.4).

- **Table 3-2 Summary of total hours for included and excluded events (excluding consideration of out of service assets)**

Categorisation	Total Hours		Peak Hours		Intermediate Hours		Off-peak Hours	
All Included Events	26,599	43%	1,528	27%	3,360	54%	21,712	43%
All Excluded Events	35,202	57%	4,046	73%	2,844	46%	28,312	57%
Total	61,801	100%	5,574	100%	6,204	100%	50,024	100%

Each event is categorised on the Work Order to summarise the reason for the outage. These categories are shown in Table 3-3 together with an exclusion designation. Categories that are marked with an "**x**" are excluded from the calculation of the performance measure data results because they are in general conformance with the exclusions defined under the revenue caps decision (2002), except those specifically discussed in this report.

Table 3-3 Breakdown of results by Outage Reasons

Outage Code	Reason	Exclusion	No of Event	Hours
3RDPARTY	Outage due to actions of third party	x	70	3,179
APDALCOA	Work by Alcoa or work by SPI PowerNet during outage initiated by Alcoa	x	12	390
BUSHFIRE	Outage requested during bushfire for safety of fire fighters from flashover as fire crosses transmission line	x	0	0
CONSCON	Element stranded by system design by outage of another element due to capital works by SP AusNet	-	0	0
CONSMAIN	Element stranded by system design by outage of another element due to maintenance works by SP AusNet	-	0	0
CONSTR	Redundant code for outage due to SP AusNet asset maintenance	-	0	0
DB_AUG	Augmentation works funded by distribution company and carried out by SPI PowerNet or its agents	x	125	11,310
DBPROX	Outage due to work by, or requested by, distribution company in proximity	x	17	219
ELECTRAN	Work during outage initiated by ElectraNet SA	x	1	1
EXCAPX	Excluded shunt reactor outage	x	6	188
EXCLUDE	Excluded from AIS and AER service standards	x	38	26,349
EXMAINT	Excluded shunt reactor outage	x	12	88
FAULT	Fault on SPI PowerNet network - not caused by distribution company	-	52	4,489
FORCED	Forced outage on SPI PowerNet network	-	36	748
FORCMAJ	Force majeure event	x	0	0
GEN_AUG	Augmentation works funded by generation company and carried out by SPI PowerNet or its agents	x	5	87
GENCO	Outage requested by generator to carry out own works	x	35	3,828
HVCUST	Work by SPI PowerNet during HV customer plant shutdown	x	3	39

Outage Code	Reason	Exclusion	No of Event	Hours
INTERCON	Interconnector constrained by SP AusNet or its agents	x	0	0
LANDOWN	Outage due to private landowners to work in proximity to lines over their land	x	0	0
RECOVER	Outage where AIS rebate is recoverable from third party	x	0	0
SNOWY	Outage requested by Snowy Mountains Control Room	x	0	0
SPICAPX	Outage due to SPI PowerNet capital works	-	313	9,811
SPIMAINT	Outage due to SPI PowerNet operational maintenance	-	429	11,552
STHHYDRO	Work during outage initiated by Southern Hydro on their assets	x	0	0
SW_NEM	Switching of network requested / directed by NEMMCO	x	1	2
SW_VEN	Switching for VENCorp load shedding – power restrictions	x	3	8
TPPROX	Outage due to work by third party in proximity	x	1	4
TRANSGRD	Outage requested by TransGrid for work on their assets	x	3	18
VEN_AUG	Augmentation works funded by VENCorp and carried out by SPI PowerNet or its agents	x	103	15,842
VICROADS	Outage due to actions of / requested by Vic Roads	x	0	0
Total			**1,265**	**88,150**

3.4 Outage Code EXCLUDE

This outage code was applied to long term outages recorded by MAXIMO for assets that are no longer in service, and therefore have no impact on the performance of the system network. The total number of works orders recorded was 38, totalling 26,349 hours. This is a circumstance created by MAXIMO itself, rather than reflecting assets which are either cold spares or likely to support the network at some time.

The primary contributing assets were:

- No. 1 and No.2 22kV/415V station transformers at Hazelwood terminal station; and
- Substation bay F at South Morang terminal station.

SKM reviewed these outages, and accepts that these assets should be excluded from any consideration of network performance on the following basis:

- The outages associated with these equipments are not part of the AER service standards scheme.
- The station service transformers at Hazelwood terminal station were removed in 2002/03, although the cable connecting these was capped rather than removed as an electricity distribution entity may wish to reuse the cables at some point in time.
- The customer works for a tee-off from the 220kV transmission line between BETS and SHTS at Fosterville. There was no new equipment included in this work.

3.5 Outage Code VEN_AUG

This outage code was applied to outages resulting from augmentation works funded by VENCorp and carried out by either SP AusNet or its agents.

In Victoria, the transmission planning role is split from the transmission asset ownership role. SP AusNet's functions are that of transmission asset owner and asset manager, whilst the responsibilities for planning of the network to meet customer demand requirements and service reliability criteria are allocated between VENCorp, an independent Victorian Government corporation, and connected customers (including electricity distribution companies).

During the establishment of the AER Performance Incentive Scheme, SP AusNet provided historical performance data for circuit availability for the period 1995 to 2000, noting that it was the equivalent data previously provided to the Victorian regulator, the then Office of the Regulator-General, Victoria (the forerunner to the now Essential Services Commission). This regulatory reporting was conducted in accordance with the Victorian Electricity System Code, which, amongst other issues, spelt out the different responsibilities of VENCorp and what were referred to as

"transmitters" (in this case, SP AusNet) together with detailing the performance measures to be reported.

Clause 100.5 of the System Code discusses the transmitter's benchmark performance standards[4], and states the following:

"100.5.1 A transmitter must use best endeavours to ensure that the performance of its transmission network and its protection systems is consistent with the benchmark performance standards set out in Attachment 11.

100.5.2 On or before 31 July in each year, a transmitter must give to the Office, VENCorp and each distributor, generator and EHV consumer with a point of connection to the transmitter's transmission network a report of the transmitter's performance during the last Financial Year against the benchmark performance standards set out in Attachment 11."

Attachment 11 details the performance benchmark standards[5] and point/measure 6 states:

"Availability of equipment forming part of the transmission network (including both forced and planned outages but excluding construction related outages):

- *Circuits > 99.5%*
- *Transformers > 99.7%*
- *Static VAR compensators > 99.0%*
- *Synchronous compensators > 91.0%*
- *Capacitor banks > 99.3%*
- *Protection systems > 99.8%"*

SKM is of the view that the data provided as historical data for the purposes of the AER PI Scheme was the same data that SP AusNet had previously submitted to the Office of the Regulator-General (ORG), VENCorp and Victorian distributors, and was based on the System Code measure for availability which excluded construction related outages.

[4] Office of the Regulator-General, Victoria, *Electricity System Code*, October 2000, pp 16

[5] pp 85

3.5.1 Audit Findings

SKM has conducted an audit of the database records between 1995 and 2000, provided by the then SPI PowerNet to SKM, and confirmed that VENCorp augmentation works were excluded from the reported performance results.

In its submission to the then ACCC on the draft determination, SP AusNet submitted a number of specific third party exclusions[6] that applied under a parallel VENCorp incentive scheme and which were sought under the AER PI Scheme. These nominated third party events included VENCorp augmentation works.

In the ACCC Victorian transmission network determination of 11 December 2002, the AER considered the SP AusNet proposed excluded third party events and concluded that " ... *the Commission considers that in some cases SPI PowerNet* [now SP AusNet] *may be able to plan or influence the third party event and therefore not all third party events should be excluded. For example, where a third party requests access to SPI PowerNet's easements it should negotiate the best possible time for the third party access. However, such events will be excluded where they fall within the definition of force majeure. That is, where the third party event is, notwithstanding the observance of good industry practice, beyond the reasonable control of SPI PowerNet.*"[7]

3.5.2 Recommendation

SKM is of the view that whilst the network planning and operating roles are separated in Victoria, typically augmentation works undertaken by a transmission company on its own network such as occurs in all other States of the National Electricity Market would not be categorised as a third party event. SKM believes such work should be included in any circuit availability performance calculations.

However, as the agreed targets set in the AER determination were based on historical data which was underpinned by the provisions of the Victorian System Code and the previous regulatory reporting regime to the ORG, SKM would recommend that the outage code VEN_AUG be excluded from the performance reporting of circuit availability for 2005 and for the remainder of the term of the current determination. This would ensure a fair and reasonable comparison between availability performance targets included in the Decision and the results currently calculated by SP AusNet using well established recording systems.

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[6] ACCC, *Victorian transmission network revenue caps: Decision*, 11 December 2002, Attachment G, pp 157

[7] Section 7.6, pp 103

3.6 Outage Code 3rd Party

From discussions with SP AusNet staff, SKM understands that the majority of the events excluded under the "3rd party" outage code were planned outages.

In considering specific third party events proposed by SP AusNet as exclusions, the AER considered that in some cases SP AusNet "*... may be able to plan or influence the third party event and therefore not all third party events should be excluded ... However, such events will be excluded where they fall within the definition of force majeure. That is, where the third party event is, notwithstanding the observance of good practice, beyond the reasonable control"* of SP AusNet[8].

As a consequence, SKM is of the view that the events in this outage code should be included in calculating the performance measures, as these do not fall within the definition of Force Majeure detailed in the AER determination.

However, as the agreed targets set in the AER determination were based on historical data which excluded these events, SKM would recommend that these events be excluded from the performance reporting for 2005. As similarly recommended in section 3.5.2, this would ensure a fair and reasonable comparison between agreed performance targets and the historical results calculated by SP AusNet using well established recording systems.

3.7 Event Based Exclusions Sought by SP AusNet

In the submission provided by SP AusNet, one (1) type of event relating to the availability of shunt reactors was specifically identified as an event that was considered outside of their control, and therefore should be excluded from their performance measure calculations. In particular, SP AusNet has sought to exclude the outages of shunt reactors from the peak and intermediate availability measures (for non-critical circuit).

In this instance, SP AusNet provided additional documentation to support their assertions.

3.7.1 Event

Unlike other reactive plant such as capacitor banks and Static Var Compensators (SVCs), shunt reactors are used to balance the network voltage when the demand for electricity is low (ie. off peak) and they are usually not required to be in service when the demand for electricity is high (i.e. peak). Whilst the switching off of these shunt reactors has a detrimental effect on the performance

[8] ACCC, *Victorian transmission network revenue caps: Decision*, 11 December 2002, pp 103

result for *Measure 1b - Circuit Availability (non-critical)(peak)* and *Measure 1d - Circuit Availability (non-critical)(intermediate),* it is considered good engineering practice and beneficial to the operation of the network.

Unlike conventional circuits, where their operation provides additional capacity and is desirable during peak periods, shunt reactors act to limit circuit capacity and are only required for network balancing at times of low load. Therefore, SP AusNet has been advised by VENCorp to de-energise these reactors during peak periods.

3.7.2 Audit Findings

SKM acknowledges SP AusNet's contention that the intention of the AER service standards was not to encourage poor operating practices to improve performance results, nor was it to establish performance drivers that provided contrary signals to the previously established AIS rebate scheme. SP AusNet has been advised by VENCorp to remove these shunt reactors from service during peak periods rather than off peak periods.

The historical data used in establishing the targets would not have included these types of outages, as the replacement program for these reactors is based on a long cycle (approximately 45 years).

3.7.3 Recommendation

SKM considers that whilst these shunt reactor have been de-energised in accordance with good engineering and operating practice, in a manner that enhances the reliability of the network, they should be considered available.

SKM recommends that the de-energisation of these reactors should not be considered as making the shunt reactor unavailable during the peak and immediate period.

4. Force Majeure

There were no Force Majeure events reported by SP AusNet.

5. Calculation of S-factors

Since the submission of the performance report to AER on 31st Jan 2006, SP AusNet has subsequently revised two performance measures during the audit period, i.e. the average outage duration (for lines) and the total circuit availability. The average outage duration (for lines) was revised from 7.635 hours originally reported to 7.542 hours. The total circuit availability was revised from 99.343% to 99.341%. SKM has reviewed these revisions and found them mainly associated with correction of the original data entry error into the MAXIMO. The difference in financial bonus due to these revisions is estimated to be an increase of $4,786.

Table 5- shows the results of S-factor calculation proposed and subsequently revised by SP AusNet and that recommended by SKM following its audit of SP AusNet service performance report.

SKM confirmed that SP AusNet has used the AER performance incentive model that contains S-factor equations and coefficients in the revenue caps decision to correctly calculate the S-factors.

Table 5-1 Performance Results

No	Performance Measure	Target	Performance			
			SP AusNet Without Exclusion	SP AusNet With Exclusion	SP AusNet Revised With Exclusion	SKM Recommended Exclusions
S1	Circuit Availability (total)	99.20%	99.343%	99.343%	99.341%	99.341%
S2	Circuit Availability (critical)(peak)	99.90%	99.945%	99.945%	99.945%	99.945%
S3	Circuit Availability (non-critical)(peak)	99.85%	99.810%	99.857%	99.857%	99.857%
S4	Circuit Availability (critical)(intermediate)	99.85%	99.745%	99.745%	99.745%	99.745%
S5	Circuit Availability (non-critical)(intermediate)	99.75%	97.946%	98.210%	98.210%	98.210%
S6	Average Outage Duration (Line)	10	7.635	7.635	7.542	7.542
S7	Average Outage Duration (Transformer)	10	6.644	6.644	6.644	6.644

- **Table 5-2 Calculated S-factors**

No	Performance Measure	Target	S Factors			
			SP AusNet Without Exclusion	SP AusNet With Exclusion	SP AusNet Revised With Exclusion	SKM Recommended Exclusions
S1	Circuit Availability (total)	99.20%	0.047667%	0.047667%	0.047000%	0.047000%
S2	Circuit Availability (critical)(peak)	99.90%	0.067500%	0.067500%	0.067500%	0.067500%
S3	Circuit Availability (non-critical)(peak)	99.85%	(0.003125%)	0.001750%	0.001750%	0.001750%
S4	Circuit Availability (critical)(intermediate)	99.85%	(0.008203%)	(0.008203%)	(0.008203%)	(0.008203%)
S5	Circuit Availability (non-critical)(intermediate)	99.75%	(0.025000%)	(0.025000%)	(0.025000%)	(0.025000%)
S6	Average Outage Duration (Line)	10	0.009125%	0.009125%	0.011450%	0.011450%
S7	Average Outage Duration (Transformer)	10	0.000000%	0.000000%	0.000000%	0.000000%
	Total		**0.087964%**	**0.092839%**	**0.094497%**	**0.094497%**

The profiles for each of the applicable measures are shown in Appendix A to illustrate the performance in graphical terms.

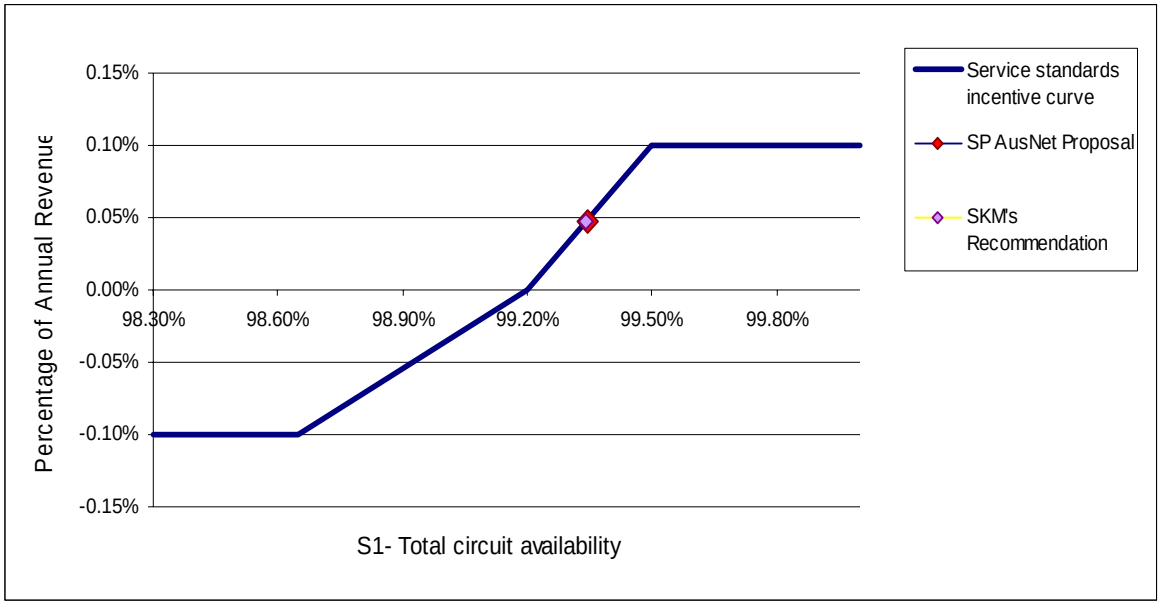
Based on these results, SKM considers SP AusNet's calculation of its S factor to be free of material errors, and recommends that the financial bonus for SP AusNet under the AER Service Standards Scheme for 2005 is **0.094497% of the agreed Annual Revenue for 2005.**

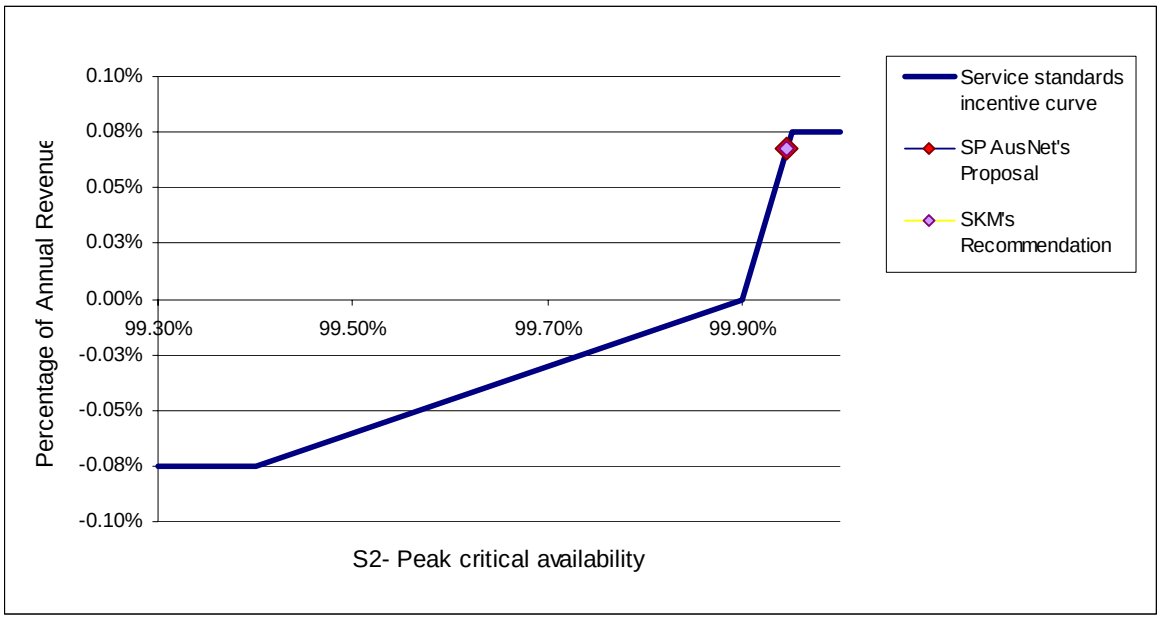
Appendix A Performance Measure Profiles

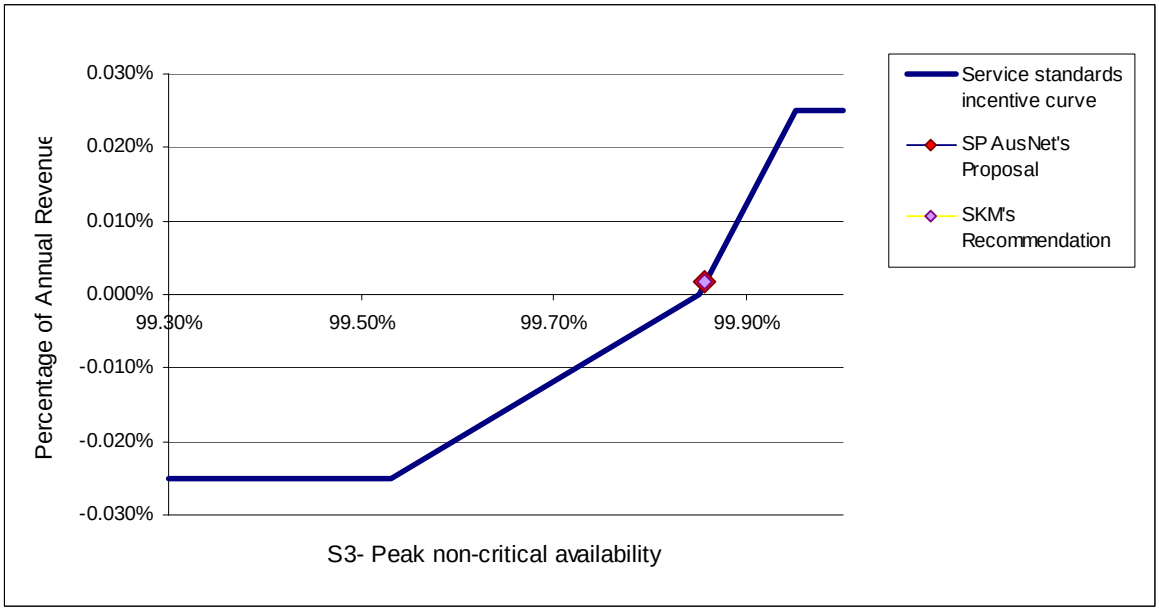
The Performance Measure profiles graphically illustrate the 2005 performance against the targets for Circuit Availability and Average Outage Duration.

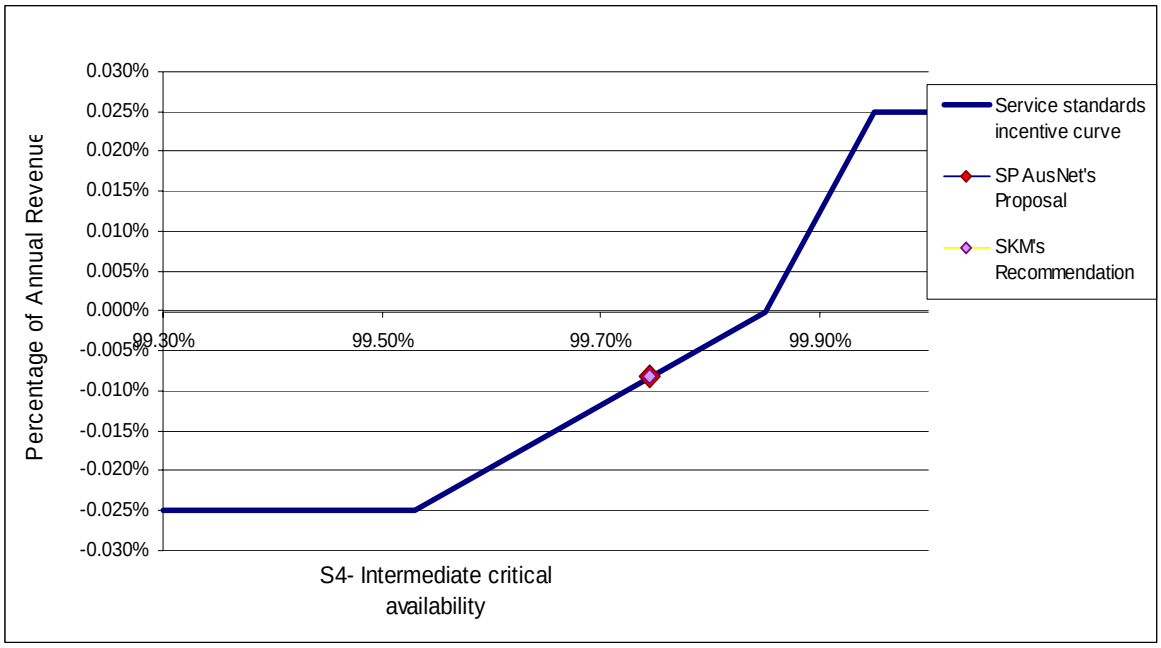
The profiles shown are:

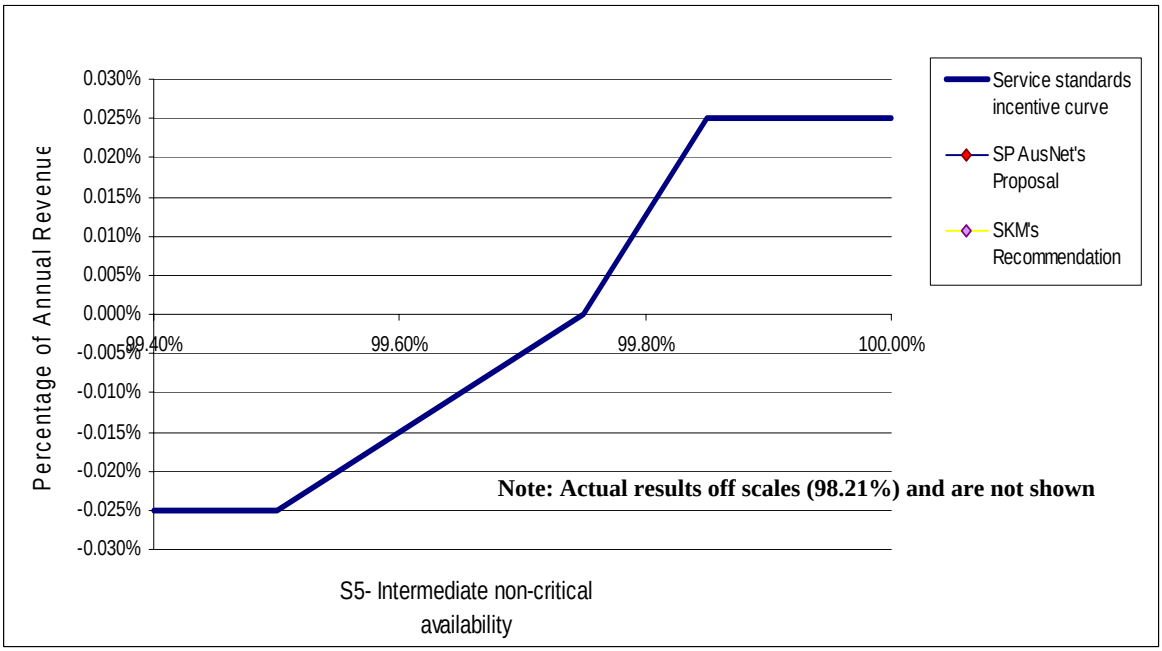
- S1 - Measure 1 Circuit Availability (total)
- S2 - Measure 1a Circuit Availability (critical)(peak)
- S3 - Measure 1b Circuit Availability (non-critical)(peak)
- S4 - Measure 1c Circuit Availability (critical)(intermediate)
- S5 - Measure 1d Circuit Availability (non-critical)(intermediate)
- S6 - Measure 3a Average Outage Duration (lines)
- S7 - Measure 3b Average Outage Duration (transformers)

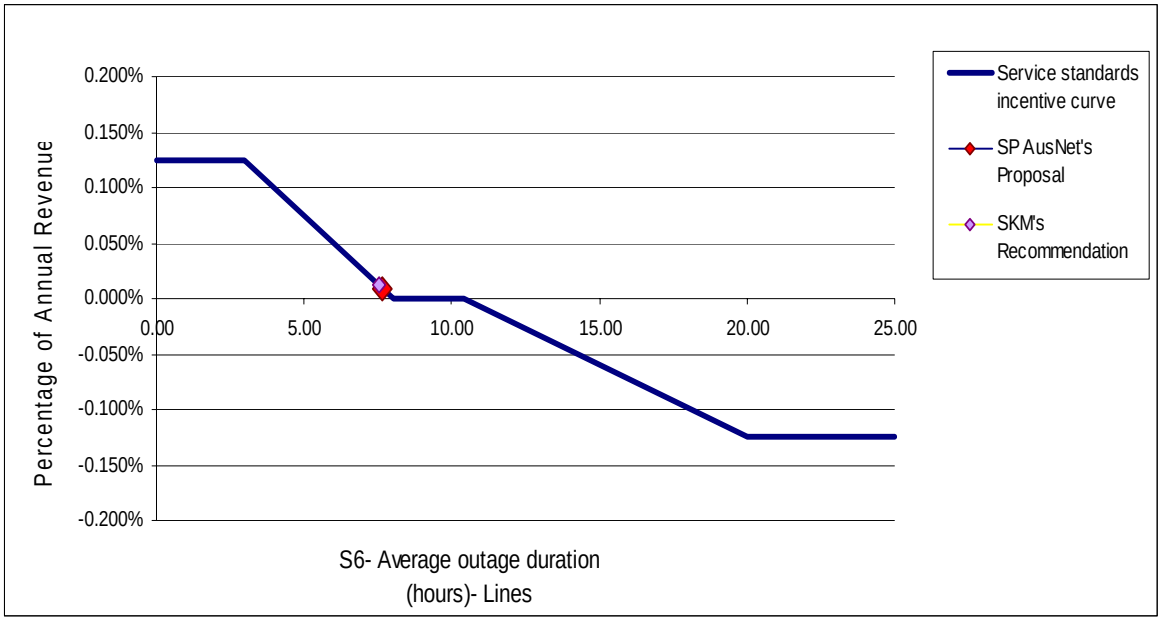


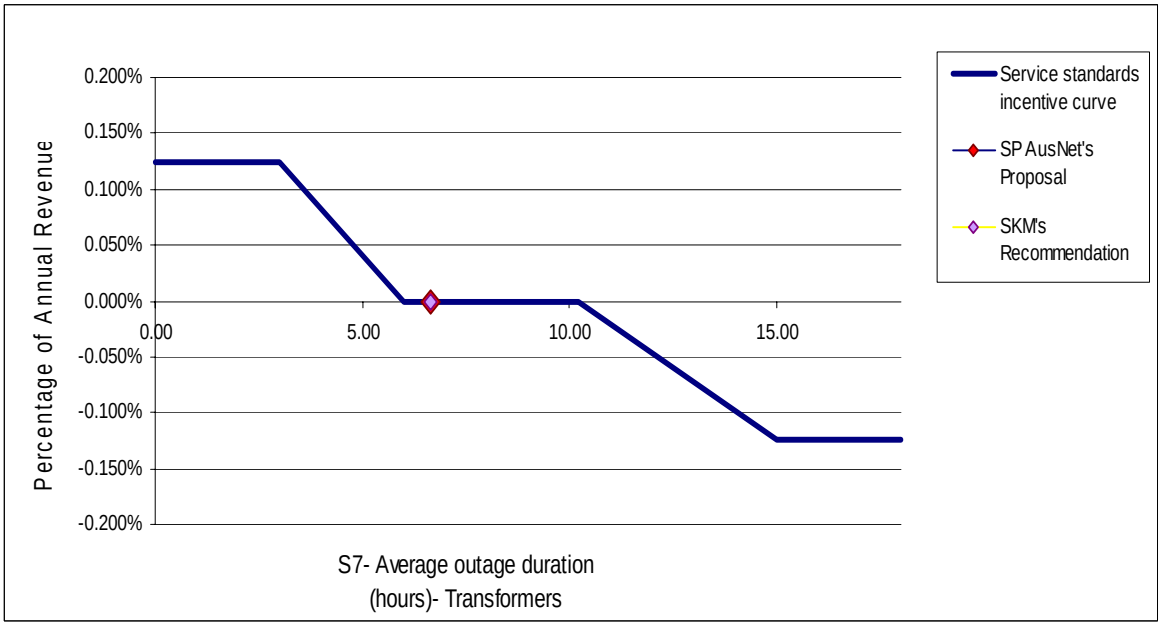

0.10%
0.08%
0.05%
0.03%
0.00%
-0.03%
-0.05%
-0.08%
-0.10%
99.30%
99.50%
99.70%
99.90%
Percentage of Annual Revenue
S2- Peak critical availability
Service standards incentive curve
SP AusNet's Proposal
SKM's Recommendation


0.030%
0.020%
0.010%
0.000%
-0.010%
-0.020%
-0.030%
99.30%
99.50%
99.70%
99.90%
Percentage of Annual Revenue
S3- Peak non-critical availability
Service standards incentive curve
SP AusNet's Proposal
SKM's Recommendation


0.030%
0.025%
0.020%
0.015%
0.010%
0.005%
0.000%
-0.005%
-0.010%
-0.015%
-0.020%
-0.025%
-0.030%
99.30%
99.50%
99.70%
99.90%
Percentage of Annual Revenue
S4- Intermediate critical availability
Service standards incentive curve
SP AusNet's Proposal
SKM's Recommendation


0.030%
0.025%
0.020%
0.015%
0.010%
0.005%
0.000%
-0.005%
-0.010%
-0.015%
-0.020%
-0.025%
-0.030%
99.40%
99.60%
99.80%
100.00%
Percentage of Annual Revenue
S5- Intermediate non-critical availability
Note: Actual results off scales (98.21%) and are not shown
Service standards incentive curve
SP AusNet's Proposal
SKM's Recommendation


0.200%
0.150%
0.100%
0.050%
0.000%
-0.050%
-0.100%
-0.150%
-0.200%
0.00
5.00
10.00
15.00
20.00
25.00
Percentage of Annual Revenue
S6- Average outage duration (hours)- Lines
Service standards incentive curve
SP AusNet's Proposal
SKM's Recommendation


0.200%
0.150%
0.100%
0.050%
0.000%
-0.050%
-0.100%
-0.150%
-0.200%
0.00
5.00
10.00
15.00
Percentage of Annual Revenue
S7- Average outage duration (hours)- Transformers
Service standards incentive curve
SP AusNet's Proposal
SKM's Recommendation