Australian Competition and Consumer Commission (ACCC)

Audit of Transend Service Standards Performance Reporting

PERFORMANCE RESULTS FOR 2004

- Final Report
- 22 March 2005

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1. Executive Summary

Sinclair Knight Merz (SKM) was engaged by the Australian Competition and Consumer Commission (ACCC) to conduct an audit of the year 2004 performance report of Transend under the ACCC Performance Incentive (PI) Scheme.

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

- the adequacy and accuracy of the recording system used to measure performance
- the accuracy of the calculations of the final performance; and
- events and or other exclusions to ensure compliance with the revenue caps and ACCC service standards guidelines.

SKM met with Transend staff in Hobart on Wednesday 23 February 2005, to review their data, systems and the integrity of the system established by Transend for retrieving data from the PROMS and Fault databases for reporting under the ACCC PI Scheme. In addition, specific events were reviewed to examine any particular issues associated with the claim for an exclusion.

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

- the performance reporting by Transend was free from material errors and in accordance with the requirements of the ACCC service standards guidelines;
- Transend has correctly applied the PI Scheme formulas and coefficients to calculate the potential performance bonus / penalty amounts using the S-factor equations contained in the revenue determination;
- the recording system used by Transend to capture the relevant details for outages is accurate and reliable;
- an audit of the interface between the PROMS and the Fault data bases, and the performance reporting files found the transfer of data to be accurate and complete;
- the application for an exclusion for the specified events relating to the upgrade of revenue metering to latest Code compliance (as a prerequisite to entering the National Electricity Market) was consistent with the agreed definition.

SKM recommends:

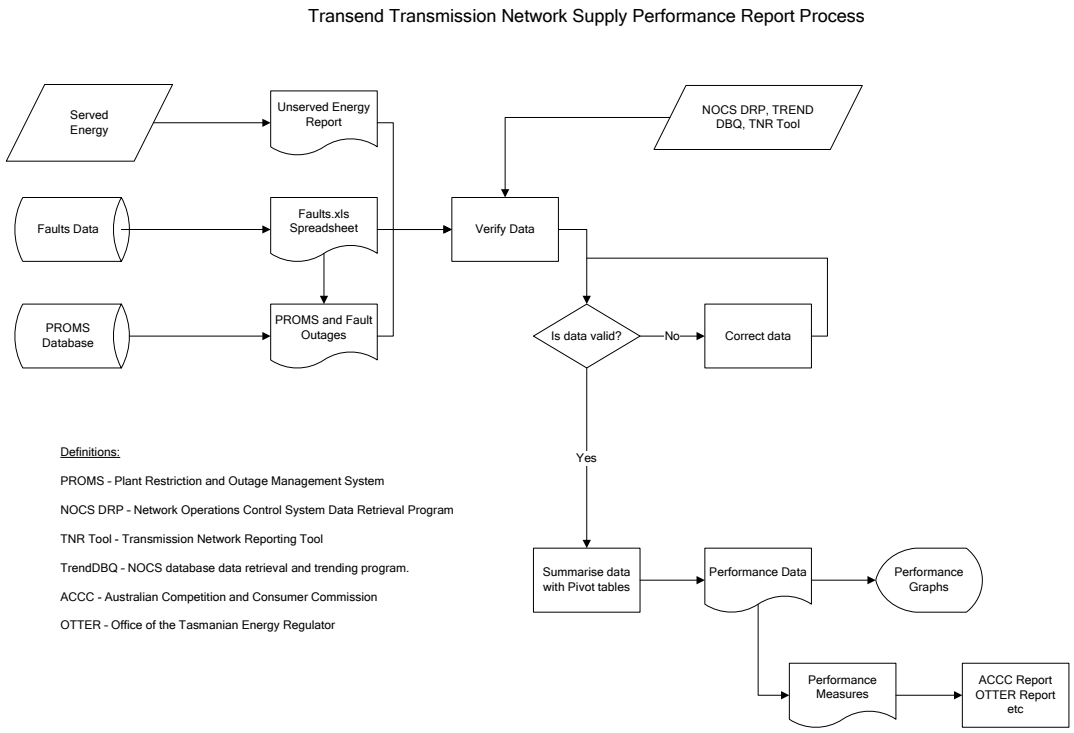
- Transend's calculation of its S factor and performance incentive be accepted as free from material errors, subject to the Commission's acceptance of the exclusion sought by Transend;
- The Commission accept Transend's exclusion of the installation of compliant revenue metering to latest Code compliance, on the basis that Transend, as a TNSP, has no control over the requirements of the project, or its implementation, timing and methodology; and

- The S-factor calculated for the bonus for Transend under the ACCC PI Scheme for 2004 is **0.0055375** or **0.55375%**. The bonus applicable would be **0.55375% of the Annual Revenue** for 2004 defined in the Transend revenue cap decision.

2. Recording System

An overview of the Transend performance reporting system is shown in Figure 2-1.

Figure 2-1 Performance Report Process



The performance reporting process uses as its primary data source, records of all planned and unplanned outages (which are recorded in the PROMS database) and all fault initiated outages (recorded in the fault data base).

Transend have documented the procedure for the extraction, analysis and sorting of data and the processing of results for the production of monthly transmission network performance reports. These procedures are contained in Transend document :Transmission Network Performance Report Procedure, TNM-GS-810-0285: Issue 3, February 2005”

2.1 Outage Details

For each planned or unplanned outage or operation on the network, and incidence where personnel are working in or near apparatus inclusive of a substation, a works order is initiated through PROMS. This work order documents the known details of any fault and the nature of work

required. The PROMS record is the record by which network security, scheduling, resourcing and other isolation related events are initiated and logged against. No planned or unplanned network switching can occur with out a PROMS request having first been initiated, researched, approved and scheduled.

All faults that occur on the network that cause the operation of a protection device are recorded on the fault data base. These records are initiated by the shift system operators and by procedure, are generated in the early stages of investigating the cause of the fault by field service groups.

The PROMS and Fault databases represent all of the data bases used to capture network operations and activities. As both of these data bases are maintained by the network operations group, who control, monitor and operate the transmission network for Transend, SKM consider they represent an accurate record of all outage events on the system.

2.2 Processing of Outage Data

Extraction of the raw data events is manually conducted on a monthly basis. Extraction of information consists of a down load of all events for the month from each system into an excel data base. The raw data is then filtered to remove non-network element outage causing events. This represents a significant culling of records.

The remaining records are then individually reviewed to ensure credibility of element outage and restoration times.

2.3 Categorisation and Exclusions

The events are then further manually reviewed to determine if the initiating event qualifies the outage for inclusion or exclusion in the performance reporting scheme.

Transend have developed an internally approved document titled “ACCC Service Standards – Terms and Measures: Standard” which defines the measures to be used when reporting for the ACCC on performance, and defines the performance incentive scheme. The measures contained in this document provides details of assets and events that should each be considered either an inclusion or an exclusion for the determination of performance measure. The document also contains a glossary of terms and examples of performance ‘S’ curves.

2.4 Further Processing of Outage Data and Validation

Transend have developed an in house software package ”Performance Watch” that analyses the raw data down loaded from the PROMS and fault data bases and also analyses the events for performance qualifying events.

This routine looks at transmission lines for which the circuit breakers at each end of the line have been opened, and transformers that have no current flowing through them. These records are used as a check to ensure that as a minimum, each of these records has been assessed for inclusion in the performance statistics. Whilst this routine may not be completely accurate or fail safe, it does act as a useful check process for the inclusion of qualifying events.

All spreadsheets provided to SKM for the 12 month review period included the full details of the raw data 'dump' and subsequent sheets showed the culling and sorting results. The work group that undertakes the performance reporting are physically close to the system operators who operate and maintain the PROMS and fault data bases. As such there is good opportunity to verify all data and address any incomplete records.

2.5 Treatment of Capital Works

Through out the 2004 calendar year, Transend undertook various augmentations and capital works that resulted in some circuits being de-commissioned, and other new circuits added to the transmission network.

SKM audited the manner in which these deletions and additions to the network were addressed for the purpose of reporting network performance.

In each instance, SKM found that the network performance statistics for the month were calculated using the actual number of feeders commissioned and considered in service at the end of that month. The 12 month performance figures were then calculated by averaging the 12 individual months performance results.

2.5.1 SKM Review of Procedure

SKM has reviewed the treatment of retired and newly commissioned assets to the Transend network and agrees with the procedure adopted. By recognising both retired and newly commissioned assets in the month it retires from or enters into the network, Transend are ensuring the highest integrity of performance data.

2.6 Calculation of Performance Measure Results

The performance measure results are calculated using the S-factor equations defined in the ACCC revenue determination. The final stage is a collation of the results into a graph illustrating the annual performance against the pre-agreed target for each measure and sub-measure.

2.7 Recording System as a Benchmark

This is the first occasion when Transend has been reviewed for ACCC performance standards. As such, the process represents the bench mark against which further reviews will be measured.

2.8 ACCC Performance Excel spreadsheet

SKM randomly reviewed the accuracy of data recorded on the excel spread sheets for a number of events through out the year. Specifically SKM reviewed the accuracy of outage commencement and restoration times against actual circuit breaker operation times and feeder and transformer current flows as recorded on the Transend system event log. The input to this log is the actual time stamped element operation time load flows taken directly from the SCADA system. This is a real time system, and SKM considers its accuracy to be excellent and the best available to Transend.

SKM also audited the determination of System Minutes and Loss of Supply Event Frequency Index (as appropriate) for a randomly selected number of outage events.

2.9 System Audit Findings

During 2004, there were 523 events that were subject to the ACCC PI Scheme. Random checks were carried out for the 2004 audit. The recording system was found to be satisfactory, and the integrity of the recording system was sound. The arithmetic functions on the Excel spreadsheets were checked and found to have been correctly applied.

The allocation of exclusions appears to have been done in accordance with Transend's interpretation of the prescribed list of exclusions.

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

3. Exclusions

The ACCC reliability incentive scheme contains provision for certain defined events to be excluded from calculated outage figures.

Transend has developed tables which define the measures to be used for each of the performance measures. These are listed in a Transend document[1]. A separate table has been developed for each of the performance measures and clearly lists such measures as; units of measure, sources of data, definitions/formula, exclusions and inclusions. These measures and definitions align with the measures and definitions prescribed by the ACCC (as appropriate).

3.1 Categorisation of 2004 events

Table 3-1 summarises the overall results by included and excluded events.

Table 3-1 Summary of Overall Performance With And Without Excluded Events

Categorisation	Performance with Exclusions			Performance without Exclusions		
	Result	%AR (Transend)	%AR (SKM)	Result	%AR (Transend)	%AR (SKM)
S1: Transmission Line availability - % Available	99.34%	0.18%	0.17500%	99.31%	0.14%	0.13750%
S2: Transformer Circuit availability - % Available	99.31%	0.08%	0.07875%	99.28%	0.07%	0.06750%
S3: Loss of Supply Frequency Index > 0.1 Minutes	18 Events	-0.10%	-0.10000%	18 Events	-0.10%	-0.10000%
S4: Loss of Supply Frequency Index > 2.0 Minutes	0 Events	0.40%	0.40000%	0 Events	0.40%	0.40000%
Total		**0.56%**	**0.55375%**		**0.51%**	**0.50500%**

Differences between Transend's AR calculation and SKM's relate solely to rounding errors.

[1] 'ACCC Service Standards – Terms and Measures' TNM-GS-809-0099, Issue 1.0, dated February 2005

3.2 Event Based Exclusion Sought by Transend

In the submission provided by Transend, one (1) event which relates to the installation of wholesale energy market metering was specifically identified as an event that was considered outside of Transend's control, and therefore should be excluded from their performance measure calculations. The installation of the wholesale energy market metering was necessary as a pre-requisite for Tasmania to enter the National Electricity Market in 2005.

Transend provided additional documentation to support the case for an exemption for this event. Further, Transend defined the installation of wholesale energy market metering as an excluded event in its Revenue Cap Application for the period 1 January 2004 to 30 June 2009.

3.2.1 Event

As stated above, the installation of the wholesale energy market metering was necessary as a pre-requisite for Tasmania to enter the National Electricity Market in 2005. Transend as a TNSP, has no control over the requirements of the project, nor its implementation, timing and methodology. The project was non-negotiable and driven by the requirement for compliant metering.

Transend have claimed an exemption for outages associated with the installation of wholesale energy market metering on the basis that:

- The event was extraordinary, uncontrollable and not managed by Transend;
- It was a one off event;
- Transend could not have prevented the impact of the event; and
- Transend could not have effectively reduced the impact of the event by adopting better practices.

3.2.2 Audit Findings

SKM acknowledges Transend's argument that the intention of the PI Scheme was not to include 'third party' events outside the control of the TNSP, which in this case is Transend.

3.2.3 Recommendation

SKM acknowledges and supports Transend's argument that the intention of the PI Scheme was not to include 'third party' events outside the control of the TNSP which in this case is Transend. SKM recommends that all outages associated with the installation of wholesale energy market metering be excluded for the determination of Transend's performance in accordance with the ACCC's Service Standards Performance Incentive Scheme.

4. Force Majeure

Transend did not claim any Force Majeure events for 2004.

5. Calculation of Bonus / Penalty

The results provided by Transend were entered into the Performance Incentive Scheme model provided to the ACCC. The bonus calculated varied marginally from the value calculated using the S-factors outlined by the Commission in the revenue determination[2] of 10 December 2003 due to some rounding off of coefficients.

The bonus incentive calculated by Transend was based on the calendar year for 2004, with the measures rounded to 2 decimal places and averaged for the year. SKM has calculated the performance measures for the same period but applied greater precision through the use of more decimal places to reduce rounding errors. The differences between the two calculations are shown in Table 5-1.

Table 5-1 Calculated Bonus

No	Performance Measure	Calculated bonus / (penalty)		% variation to SKM values
		Transend	SKM	
1	Transmission Line Circuit Availability	$204,642	$198,958	2.85%
2	Transformer Circuit Availability	$ 90,952	$ 89,531	1.59%
3	Loss of Supply Frequency Index (>0.1)	($113,690)	($113,690)	0.00%
4	Loss of Supply Frequency Index (>2.0)	$454,760	$454,760	0.00%
	TOTAL	**$636,664**	**$629,559**	**1.13%**

These calculations have been done for comparative purposes only and have been based on annual revenue (AR) of $113.69M.

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

Table 5-2 summarises the service standards S-factors, based on the equations contained in Appendix F to the Transend revenue cap decision.[3]

[2] Tasmanian Transmission Network Revenue Cap 2004 2008/09, ACCC, 11 December 2003

[3] pp 123

Table 5-2 Service Standards S-factors

Measure	Performance	S-factor
Transmission circuit availability	99.34%	0.00175
Transformer availability	99.31%	0.0007875
Frequency of loss of supply > 0.1 mins	18 events	- 0.0010
Frequency of loss of supply > 2 mins	0 events	0.0040
Total		**0.0055375**

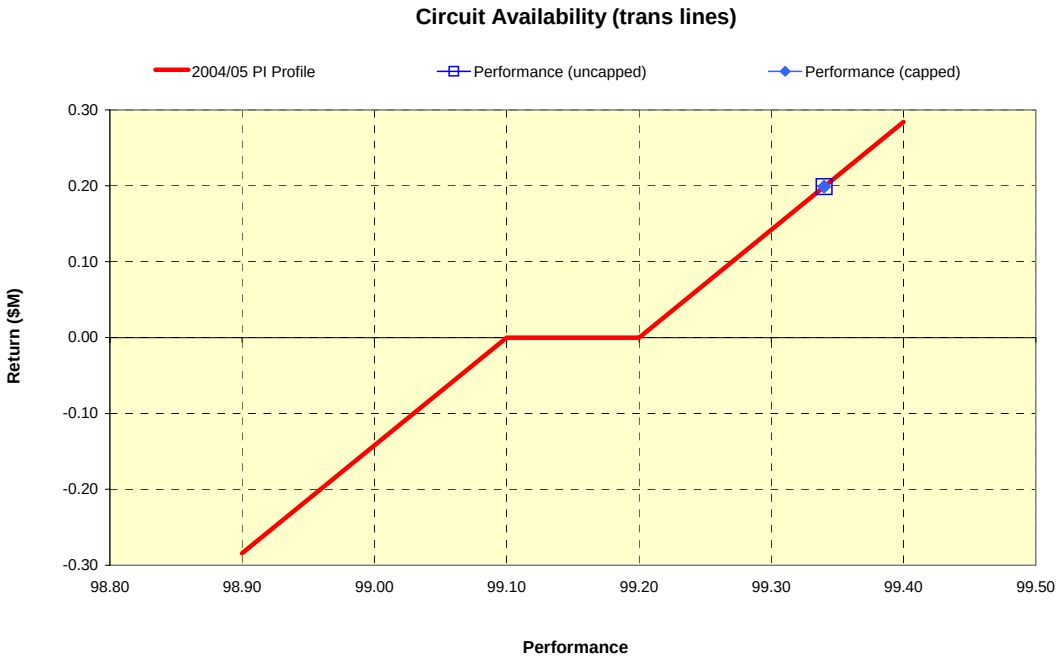
Based on the comparative calculation results, SKM considers Transend's calculation of its S factor to be free of material errors, subject to ACCC agreeing to the exclusion sought by Transend and recommended by SKM. The bonus recommended for Transend under the ACCC PI Scheme for 2004 is **0.55375% of the agreed Annual Revenue for 2004**.

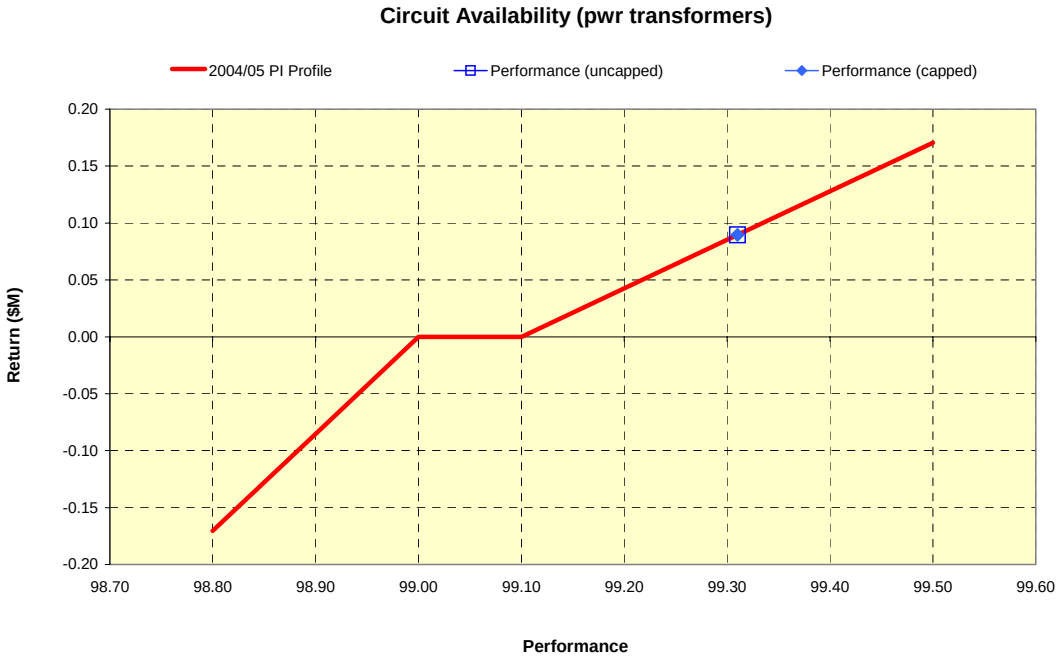
Appendix A Performance Measure Profiles

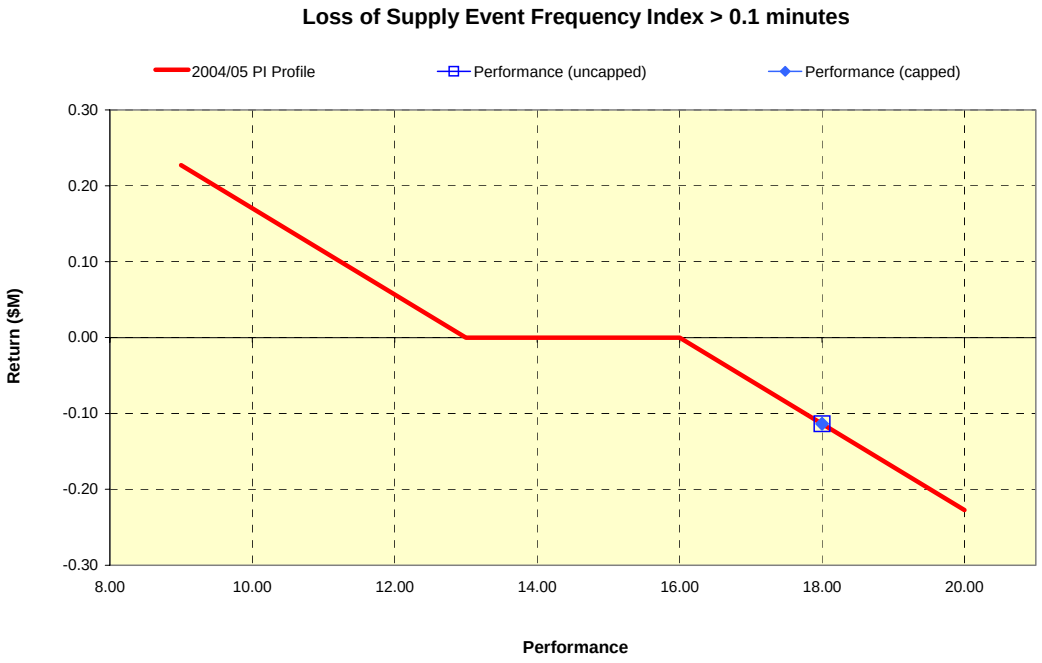
The Performance Measure profiles graphically illustrate the 2004 performance against the targets for Circuit Availability and Average Outage Duration, based on the acceptance of the recommended exclusions.

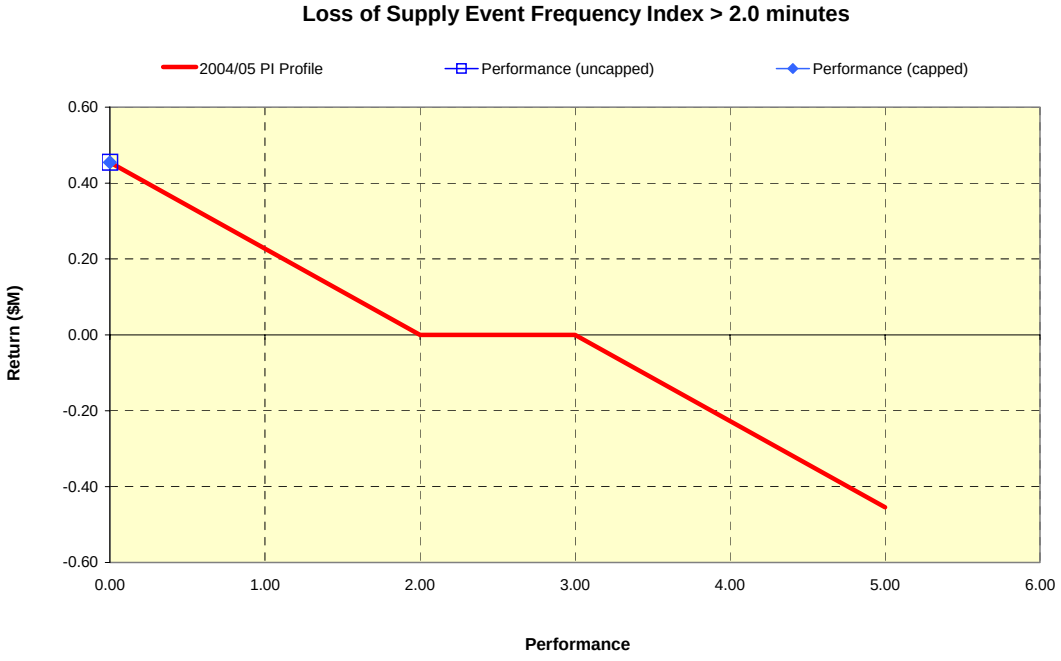
The profiles shown are:

- Measure S1 Transmission Line Circuit Availability (total)
- Measure S2 Transformer Circuit Availability
- Measure S3 Loss Of Supply Frequency Index (>0.1)
- Measure S4 Loss Of Supply Frequency Index (>2.0)


Circuit Availability (trans lines)
2004/05 PI Profile
Performance (uncapped)
Performance (capped)
Return ($M)
0.30
0.20
0.10
0.00
-0.10
-0.20
-0.30
98.80
98.90
99.00
99.10
99.20
99.30
99.40
99.50
Performance


Circuit Availability (pwr transformers)
2004/05 PI Profile
Performance (uncapped)
Performance (capped)
Return ($M)
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
98.70
98.80
98.90
99.00
99.10
99.20
99.30
99.40
99.50
99.60
Performance


Loss of Supply Event Frequency Index > 0.1 minutes
2004/05 PI Profile
Performance (uncapped)
Performance (capped)
0.30
0.20
0.10
0.00
-0.10
-0.20
-0.30
Return ($M)
8.00
10.00
12.00
14.00
16.00
18.00
20.00
Performance


Loss of Supply Event Frequency Index > 2.0 minutes
2004/05 PI Profile
Performance (uncapped)
Performance (capped)
0.60
0.40
0.20
0.00
-0.20
-0.40
-0.60
Return ($M)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
Performance