APPENDIX 47

STPIS reliability of supply target setting

Energex

STPIS Reliability of Supply Target Setting Methodology

AER Determination 2015-20

energex

positive energy

Version control

Version	Date	Description
Draft	02-June-2014	Initial
1	11-June-2014	PB Comments on Draft included
2	24-Sep-2014	Actual 2013/14 STPIS Results incorporated

Energex Limited (Energex) is a Queensland Government Owned Corporation that builds, owns, operates and maintains the electricity distribution network in the growing region of South East Queensland. Energex provides distribution services to almost 1.4 million domestic and business connections, delivering electricity to a population base of around 3.2 million people.

Energex's key focus is distributing safe, reliable and affordable electricity in a commercially balanced way that provides value for its customers, manages risk and builds a sustainable future.

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1 Purpose

The purpose of this paper is to explain the methodology utilised to determine the STPIS reliability of supply targets for the 2015-20 regulatory control period as part of Energex's regulatory submission.

2 Background

Energex is currently operating under a Service Target Performance Incentive Scheme (STPIS), which is administered by the Australian Energy Regulator (AER) and commenced in July 2010. The revenue at risk is currently ±2%, and in the Final Framework and Approach paper the AER indicated their proposed approach is to maintain the revenue at risk at ±2% in the next regulatory control period. The scheme includes components for reliability of supply, customer service and guaranteed service levels (GSLs). However, Energex does not operate under the STPIS GSL component, as Energex's Distribution Authority includes a separate jurisdictional requirement to operate a GSL scheme.

Under the STPIS Guidelines (2009), Energex is required to propose STPIS targets and supporting methodology in its regulatory submission to the AER for the next regulatory control period 2015-20. The current targets were proposed by Energex and approved by the AER after review by external consultants. This paper details the method applied for setting the targets for the reliability of supply component of the scheme. Note that targets for the customer service component are not included in this paper.

3 STPIS AER Targets Guidelines

An extract of Section 3.2 from the 2009 'Guidelines' is provided in Appendix A for further reference on target setting requirements. Whilst the STPIS scheme requires targets to be set based on Energex's five year average historical performance data, future targets must also recognise the impact of:

- Regulator approved capital and operating expenditure used to achieve improvements in performance to date (ie 2013/14)
- Regulator approved capital and operating expense remaining in the current regulatory (2014/15) period which will impact reliability prior to the commencement of the next regulatory control period
- Capital and operating expense sought in the next regulatory control period (i.e. 2015-20) to improve reliability performance.

The five year average performance must also be adjusted to correct for revenue at risk if the actual STPIS reward or penalty breached the cap in any year of the regulatory control period.

4 Historical Performance

The following graphs show the historical SAIDI/SAIFI performance after removal of events excluded under STPIS Guideline clause 3.3, which includes major event days, compared to the existing STPIS targets. The current targets and results are also shown in Tables 4.1 and 4.2, along with the calculated five year average.

Figure 4.1 – CBD STPIS Reliability

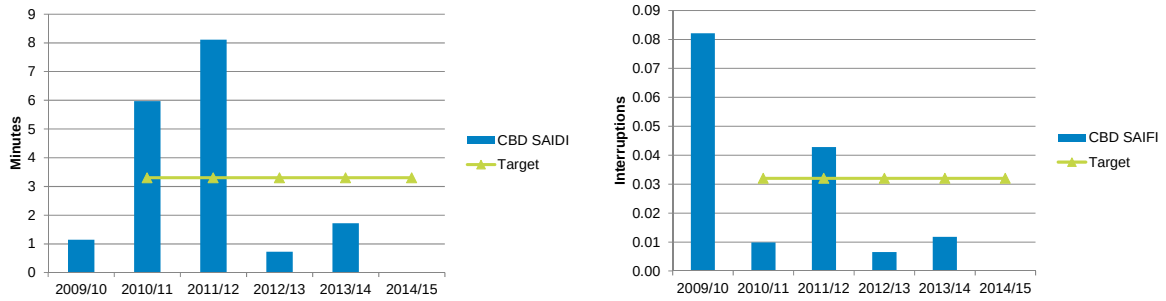


Figure 4.2 – Urban STPIS Reliability

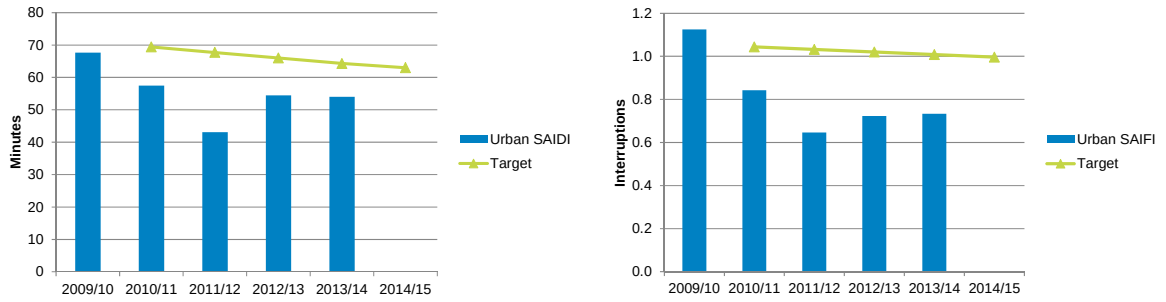


Figure 4.3 – Rural STPIS Reliability

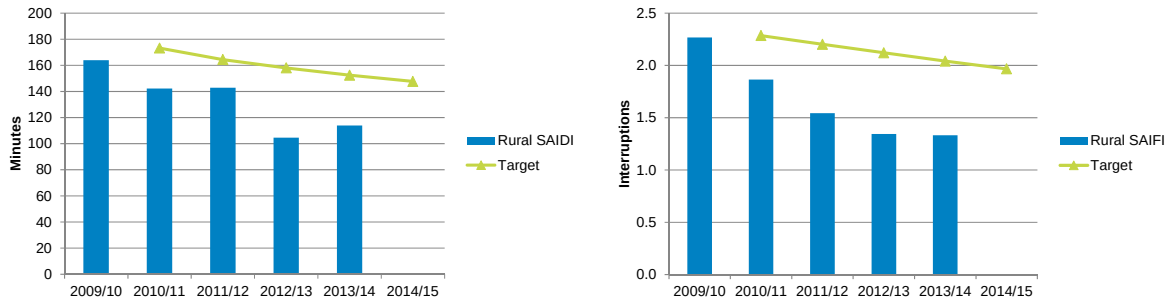


Table 4.1 – Current STPIS Reliability Targets

	SAIDI (Minutes p.a.)			SAIFI (Interruptions p.a.)		
	CBD	Urban	Rural	CBD	Urban	Rural
2010-11	3.3	69.4	173.2	0.032	1.044	2.285
2011-12	3.3	67.7	164.4	0.032	1.032	2.201
2012-13	3.3	66.0	158.0	0.032	1.020	2.120
2013-14	3.3	64.3	152.4	0.032	1.008	2.041
2014-15	3.3	63.0	147.6	0.032	0.996	1.967

Table 4.2 – Historical STPIS Reliability Results

	SAIDI (Minutes p.a.)			SAIFI (Interruptions p.a.)		
	CBD	Urban	Rural	CBD	Urban	Rural
2009-10	1.1	67.6	164.0	0.082	1.125	2.266
2010-11	6.0	57.5	142.3	0.010	0.843	1.864
2011-12	8.1	43.1	142.9	0.043	0.646	1.543
2012-13	0.7	54.4	104.6	0.007	0.723	1.344
2013-14	1.7	54.1	113.9	0.012	0.733	1.333
Average	**3.5**	**55.3**	**133.5**	**0.031**	**0.814**	**1.670**

5 STPIS Target Setting Methodology

As outlined above, the STPIS Guideline states that performance targets to apply during the regulatory control period must be based on average performance over the past five regulatory years. These averages are presented in Table 4.2.

5.1 Funded Reliability Improvements

Clause 3.2.1(a)(1A) of the Guideline requires that these averages be adjusted to allow for funded reliability improvements in the previous regulatory control period. Energex notes that the impact of reliability improvements cannot be readily measured in short term reliability performance due to the influence of external events causing fluctuations in actual performance from year to year. Improvements can, however, be observed in the aggregate performance over time.

Energex has undertaken funded reliability improvements in each year of the current regulatory control period however significant investment in reliability was made in the first two years of the regulatory control period when compared to the remaining years. Energex notes that investment made in year one of the current regulatory control period is reflected in improved performance in years two to five. Similarly, investment in year two resulted in improved performance in years three to five.

Energex believes that the impact of these improvement works is inherently contained within the five year average. Therefore, no additional adjustment has been made to allow for completed reliability improvements.

5.2 Revenue at Risk

Clause 3.2.1(a)(1B) of the Guideline requires that an adjustment be made to correct for the revenue at risk to the extent that it does not lie between the upper limit and the lower limit. In other words, the AER will take account of whether a DNSP breached the cap on revenue at risk in the current regulatory control period when establishing performance targets.

This clause was included in the STPIS to ensure that a distributor does not experience a penalty, by way of increasingly difficult performance targets, in the next regulatory control period for improved service performance that exceeded the revenue at risk. Likewise, an adjustment is required to ensure that a DNSP does not benefit, by way of easier performance targets, in the next regulatory control period for service performance that fell below the amount of revenue at risk.

As Energex has exceeded the cap for revenue at risk for the first four years of the regulatory control period, the performance in these years should be adjusted accordingly when calculating targets to apply in the next regulatory control period. The STPIS Guideline does not set out an approach for how this modification should be undertaken, so Energex has developed a methodology to carry out this adjustment.

The methodology is to reduce the s-factor for each reliability parameter in proportion to its contribution, such that their sum equals the revenue cap (2%) in each year. The reduced s-factor for each reliability parameter is then used to calculate the adjusted performance for that year. The calculation is detailed further below.

1) Determine the "raw" s-factor for each reliability parameter in the year that the revenue cap was exceeded. This is done by taking the actual SAIDI or SAIFI performance achieved in the year, subtracting it from its respective target, and then multiplying by the incentive rate for that parameter.

2) Summate the individual raw s-factors for each parameter to calculate an overall raw s-factor.

3) Determine the ratio between the overall raw s-factor and the capped s-factor (2%).

4) Pro rate the s-factor for each parameter by the ratio calculated in (3). These adjusted s-factors should now summate to equal the revenue cap (2%).

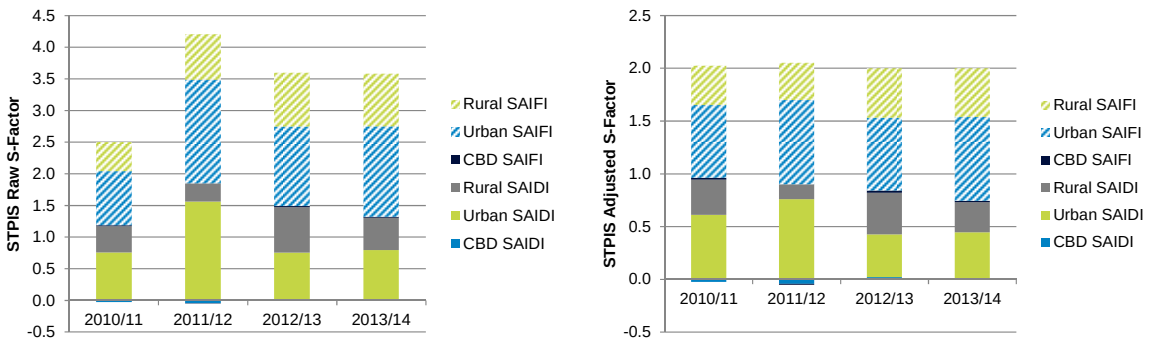
5) Convert the adjusted s-factor for each parameter back to a SAIDI or SAIFI value by multiplying it by its incentive rate and then adding it to its respective SAIDI or SAIFI target.

Note that if any individual reliability parameter was not favourable to its target (i.e. it has a negative s-factor) in the year under consideration, it has not been included in the adjustment, and the "capped" s-factor in step (3) is increased to adjust for the negative value.

These adjusted SAIDI and SAIFI values then replace the actual values achieved in that year when calculating the five year average. For the next regulatory control period, the five years of data to be included are 2009/10 to 2013/14. As Energex was not operating under the STPIS in 2009/10, these SAIDI and SAIFI results are not adjusted for the five year average.

The full calculation used to determine the proposed STPIS reliability targets can be found in Appendix 2. The following graphs outline the adjustment to Energex's actual s-factors for 2010/11 to 2013/14 using the methodology above.

Figure 5.1 – STPIS S-Factors before and after adjustment



6 Proposed STPIS Targets

The proposed STPIS reliability targets for SAIDI and SAIFI for the next regulatory control period are detailed in Table 6.1.

Table 6.1 – Proposed STPIS Reliability Targets

	SAIDI (Minutes p.a.)			SAIFI (Interruptions p.a.)		
	CBD	Urban	Rural	CBD	Urban	Rural
Proposed	3.9	60.1	144.5	0.035	0.907	1.874

As outlined in Section 3 above, in accordance with the STPIS Guidelines, the performance targets must take account of any capital and operating expense sought in the next regulatory control period (i.e. 2015-20) to improve reliability performance. Energex's strategy for reliability in the next regulatory period is to focus on worst performing feeders. As these feeders typically do not contribute significantly to the "average" category SAIDI and SAIFI figures, it is not expected that reliability improvements to the worst performing feeders will result in a material change to the urban and rural reliability indices. Therefore, the proposed STPIS reliability targets will remain constant, and not be reduced throughout the regulatory control period to account for funded improvements to reliability.

The five-year average and STPIS targets for 2014-15 of the current regulatory control period are shown below in Table 6.2 for comparison purposes.

Table 6.2 – Proposed STPIS Reliability Targets

	SAIDI (Minutes p.a.)			SAIFI (Interruptions p.a.)		
	CBD	Urban	Rural	CBD	Urban	Rural
Average 09/10-13/14	3.5	55.3	133.5	0.031	0.814	1.670
Target 2014/15	3.3	63.0	147.6	0.032	0.996	1.967
Proposed target	3.9	60.1	144.5	0.035	0.907	1.874

The table shows that the STPIS targets proposed for the next regulatory control period are slightly lower than the urban and rural SAIDI and SAIFI targets which will apply in 2014/15. However, the targets for CBD are slightly relaxed from the levels in the current regulatory control period.

7 RIN Schedule 1 checklist

The table below sets out the requirements and relevant reference for each of the Submission RIN Schedule 1 clauses relating to Service and Quality.

RIN Clause	Description	Section Reference
23.1	Provide Energex's detailed methodology for calculating the following parameters used in the Service Target Performance Incentive Scheme (STPIS);	
23.1(a)	…the SAIDI and SAIFI targets for each supply reliability area;	5.1, 5.2
23.1(b)	…the customer service parameters and targets;	Regulatory Proposal Chapter 18 Section 18.6.1
23.1(c)	…daily SAIDI, SAIFI and customer service performance derived from the individual interruption data under 23.2;	Reset RIN Table 6.2 and 6.4
23.1(d)	…the MED threshold derived from the daily SAIDI data;	Energex Schedule 1 Attachment: Supplementary Information
23.1(e)	The incentive rates to apply to each supply reliability area.	Regulatory Proposal Chapter 18 Section 18.7.1
23.2	If Energex proposes adjustments to the STPIS targets away from those based upon raw historical data Energex must provide, in respect of each adjustment:	
23.2(a)	…the reasons for the adjustment;	5.1, 5.2
23.2(b)	the quantum of the adjustment, and the effect of the adjustment on the targets for each of the supply reliability areas; and	6
23.2(c)	the method, basis and empirical data used as justification for the adjustment.	5.2, Appendix 2

Appendix 1 – Extract from AER STPIS Guidelines (2009)

3.2 Values for parameters

3.2.1 Performance targets

(a) The *performance targets* to apply during the *regulatory control period* must not deteriorate across *regulatory years* and must be based on average performance over the past five *regulatory years*, modified by the following:

(1) an adjustment to ensure that average performance over the past five regulatory years reflects events excluded under clause 3.3 and appendix D of this *scheme*.

(1A) any reliability improvements completed or planned where the planned reliability improvements are:

(i) included in the expenditure program proposed by the DNSP in its *regulatory proposal*, or
(ii) proposed by the DNSP, and the cost of the improvements is allowed by the relevant regulator, in the DNSP's previous *regulatory proposal* or regulatory submission, and
(iii) expected to result in a material improvement in supply reliability.

(1B) an adjustment to correct for the *revenue at risk*, that is the sum of the *s-factors* for all *parameters*, to the extent it does not lie between the upper limit and the lower limit in accordance with clause 2.5(a).

(2) any other factors that are expected to materially affect network reliability performance.

(b) Where a DNSP proposes a *performance target* modified in accordance with clause 3.2.1(a), the DNSP must provide in writing an explanation of how the modified *performance target* has been calculated.

(c) Where five *regulatory years* of data is not available the AER may approve a *performance target* based on an alternative methodology or benchmark where the AER is satisfied that the *performance target* meets the objectives set out in clause 1.5.

Appendix 2 – S-factor Adjustment Calculation

Parameter	Item	2009/10	2010/11	2011/12	2012/13	2013/14	Average
CBD SAIDI	Actual (mins)	1.1	6.0	8.1	0.7	1.7	3.5
	Target (mins)		3.3	3.3	3.3	3.3	
	Incentive Rate		0.0088	0.0088	0.0088	0.0088	
	Raw s-factor	0	-0.0235	-0.0423	0.0226	0.0139	
	Raw s-factor above 0		0.0000	0.0000	0.0226	0.0139	
	Contribution		0.0000	0.0000	0.0100	0.0050	
	Capped s-factor		-0.0235	-0.0423	0.0126	0.0089	
	Capped Actual (mins)	**1.1**	**6.0**	**8.1**	**1.9**	**2.3**	**3.9**
Urban SAIDI	Actual (mins)	67.6	57.5	43.1	54.4	54.1	55.3
	Target (mins)		69.4	67.7	66.0	64.3	
	Incentive Rate		0.0634	0.0634	0.0634	0.0634	
	Raw s-factor	0	0.7564	1.5604	0.7325	0.6492	
	Raw s-factor above 0		0.7564	1.5604	0.7325	0.6492	
	Contribution		0.1449	0.7994	0.3253	0.2350	
	Capped s-factor		0.6116	0.7610	0.4072	0.4142	
	Capped Actual (mins)	**67.6**	**59.8**	**55.7**	**59.6**	**57.8**	**60.1**
Rural SAIDI	Actual (mins)	164.0	142.3	142.9	104.6	113.9	133.5
	Target (mins)		173.2	164.4	158.0	152.4	
	Incentive Rate		0.0134	0.0134	0.0134	0.0134	
	Raw s-factor	0	0.4143	0.2882	0.7156	0.5158	
	Raw s-factor above 0		0.4143	0.2882	0.7156	0.5158	
	Contribution		0.0793	0.1477	0.3178	0.1867	
	Capped s-factor		0.3350	0.1406	0.3978	0.3291	
	Capped Actual (mins)	**164.0**	**148.2**	**153.9**	**128.3**	**127.8**	**144.5**
CBD SAIFI	Actual (interruptions)	0.082	0.010	0.043	0.007	0.012	0.031
	Target (interruptions)		0.032	0.032	0.032	0.032	
	Incentive Rate		0.7993	0.7993	0.7993	0.7993	
	Raw s-factor	0	0.0177	-0.0086	0.0204	0.0161	
	Raw s-factor above 0		0.0177	0.0000	0.0204	0.0161	
	Contribution		0.0034	0.0000	0.0091	0.0058	
	Capped s-factor		0.0143	-0.0086	0.0113	0.0103	
	Capped Actual (int.)	**0.082**	**0.014**	**0.043**	**0.018**	**0.019**	**0.035**

Parameter	Item	2009/10	2010/11	2011/12	2012/13	2013/14	Average
Urban SAIFI	Actual (interruptions)	1.125	0.843	0.646	0.723	0.733	0.814
	Target (interruptions)		1.044	1.032	1.020	1.008	
	Incentive Rate		4.2346	4.2346	4.2346	4.2346	
	Raw s-factor	0	0.8528	1.6358	1.2568	1.1641	
	Raw s-factor above 0		0.8528	1.6358	1.2568	1.1641	
	Contribution		0.1633	0.8380	0.5582	0.4213	
	Capped s-factor		0.6895	0.7978	0.6986	0.7427	
	Capped Actual (int.)	**0.082**	**0.881**	**0.844**	**0.855**	**0.833**	**0.907**
Rural SAIFI	Actual (interruptions)	2.266	1.864	1.543	1.344	1.333	1.670
	Target (interruptions)		2.285	2.201	2.120	2.041	
	Incentive Rate		1.0957	1.0957	1.0957	1.0957	
	Raw s-factor	0	0.4615	0.7207	0.8500	0.7754	
	Raw s-factor above 0		0.4615	0.7207	0.8500	0.7754	
	Contribution		0.0884	0.3692	0.3775	0.2807	
	Capped s-factor		0.3731	0.3515	0.4725	0.4948	
	Capped Actual (int.)	**2.266**	**1.944**	**1.880**	**1.689**	**1.589**	**1.874**