Attachment G.7

SAPN_Reliability_Low reliability feeders

03 July, 2015

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1. Executive Summary

The purpose of this business case is to seek approval for $8.6 (June 2015, $ million) to implement initiatives to address the reliability performance of SA Power Networks' worst served customers, over the 2015-20 Regulatory Control Period (**RCP**).

Prior to the 2010-15 RCP, the Essential Services Commission of South Australia (**ESCoSA**) had a regime in place that provided monetary incentives to SA Power Networks to improve the performance of poor performing feeders. This regime was adopted because customers in general were willing to pay to improve the reliability to the worst served customers. Consequently, when establishing the 2010-15 Reliability Service Standard Framework, ESCoSA created a regime whereby SA Power Networks was required to publicly report on the worst performing 5% of feeders. The criterion for this was that a feeder's System Average Interruption Duration Index (**SAIDI**) exceeded 2.1 times the regional SAIDI average service standard target for two consecutive years.

Generally, poor performing feeders remain on this 'low reliability feeders' list for one or two years until improvements are implemented. However, there are currently 31 feeders which supply small remote communities whose reliability levels have exceeded the 2.1 times regional SAIDI threshold for at least three consecutive years. These feeders have on average exceeded the service standard target by more than five times. Given that only a small number of customers are affected, the lower service levels that these customers experience do not contribute materially to the overall reliability performance outcomes of the region. This means that SA Power Networks is not incentivised under the Service Target Performance Incentive Scheme (**STPIS**) to improve network reliability in these areas. However, we are required to report to ESCoSA on actions that we are taking to improve the reliability of supply to these areas.

The 31 distribution feeders (supplying approximately 3,900 customers) represent less than two per cent of the total number of feeders in our network. Of these 31 feeders, there are 24 feeders that have feasible reliability solutions similar to the hardening the network initiatives that can be implemented. For six of the remaining feeders, reliability issues can be addressed by managing reliability performance of the upstream network within the core reliability program. The other remaining feeder is considered suitable for a micro-grid trial. Once implemented, the proposed solutions will remove these feeders from the 'Low reliability feeders' list.

ESCoSA expects that feeders on the 'Low reliability feeder' list will not remain on that list for multiple consecutive periods. To this end, SA Power Networks' low reliability feeders program has been specifically developed to improve reliability performance of the 24 low reliability feeders and remove them from the 'Low reliability feeder' list.

SA Power Networks undertook a comprehensive Customer Engagement Program (**CEP**) prior to preparing its Original Proposal. Throughout our CEP, customers and stakeholders expressed support for programs aimed at:

- further protecting some parts of the network, particularly in regional areas which are more susceptible to damage from storms, especially lightning strikes; and
- upgrading and reinforcing the network where the network supply configuration to an area is susceptible to failure (eg single radial supply lines in rural and remote areas).

In accordance with the National Electricity Rules in 6.5.7 (e), this business case seeks to start addressing the specific concerns of electricity consumers on low reliability feeders, while understanding that it would be difficult and extremely expensive to re-design a full network to withstand all causes of poor reliability.

This program is based on targeted cost effective reliability solutions that aim to mitigate the impact on these low reliability feeders, understanding that the net STPIS impact has been calculated (+$350k p.a.) and that SA Power Networks won't materially benefit financially (and in any case this modelled benefit would be largely offset by the equivalent modelled STPIS penalties expected under the separate 'hardening the network' program).

From a customer perspective, the low reliability feeder program has a net customer Value of Customer Reliability (**VCR**) benefit of the order of $0.62m p.a. and therefore a minor net present cost of $0.1m (NPV = -$0.1m over 35 years), using VCR as an indicator of the value of reliability to customers.

2. Rule requirement

Clause 6.5.7(a) of the National Electricity Rules (**NER**) provides that SA Power Networks must submit a building block proposal that includes a forecast of the capital expenditure required to meet the capital expenditure objectives for the 2015-20 RCP. This includes capital expenditure required to comply with all applicable regulatory obligations or requirements associated with the provision of Standard Control Services (**SCS**) and to maintain the reliability of SA Power Networks' SCS.

The AER must accept the proposed capital expenditure forecast that SA Power Networks includes in its building block proposal if the AER is satisfied the forecast capital expenditure for the 2015–20 RCP reasonably reflects the capital expenditure criteria. In making this assessment the AER must have regard to the capital expenditure factors.

In particular, in assessing the expenditure required to comply with all of these obligations, SA Power Networks is required to have regard to 'the extent to which the forecast includes expenditure to address the concerns of electricity consumers identified by the DNSP in the course of its engagement with electricity consumers' [1] (**Consumer Engagement Factor**).

Reliability capital expenditure is required in order for us to maintain our reliability performance and comply with the ESCoSA service standards for reliability set out in the South Australian Electricity Distribution Code (**EDC**). Compliance with the EDC is a condition of our Distribution Licence.

[1] NER clause 6.5.6(e)(5A).

3. Background

3.1 Historical Performance

ESCoSA defines 'Low Reliability Distribution Feeders' as feeders within a particular region which have exceeded 2.1 times the SAIDI service standard for two consecutive financial years.

A total of 31 feeders (supplying approximately 3,900 customers) have been identified as low reliability distribution feeders, which have appeared on the list in excess of two consecutive years i.e. three years running, representing approximately 2% of the total number of feeders in the Network. The SAIDI performance for these feeders is on average 5.7 times the annual SAIDI average service standard target (i.e. these customers have consistently experienced considerably worse performance than other customers for many years).

Our underlying reliability performance is in line with ESCoSA's standards and our legal requirement is that our network's reliability performance is no worse than at the time the assets were leased from the South Australian Government. However our underlying reliability performance tends to mask the actual overall performance experienced by some customers as explained above.

SA Power Networks considers the poor network performance experienced by these customers is unacceptable and needs to be addressed in line with ESCoSA's expectations that our overall reliability performance will not further decline but instead will be improved over time, in accordance with the expectations of the South Australian service standard framework. We also note that ESCoSA still requires reporting and monitoring of low reliability feeders and that we must include in our annual report what actions are being taken to improve the reliability of these feeders.

3.2 Customer Consultation

Commencing in November 2012, SA Power Networks has undertaken a comprehensive CEP leading up to our 2015-20 reset submission in October 2014. The results of this process were progressively published including in the consultation document 'The South Australian Distribution Network: Directions and Priorities 2015 to 2020' which is available from the consultation website talkingpower.com.au.

During the research stage of our Talking Power CEP we provided relevant information on key topics and asked our customers and key stakeholders what they expected from SA Power Networks over the next five years and beyond. This was undertaken in the context that any investments and operating costs would be managed within a 'no more than CPI' increase in their network charges. Specifically, with regard to responding to severe weather events, the Talking Power consultation program confirmed that:

- 88% of customers support further protecting the network to harden against lightning and storms;
- customers in poorly-served/low reliability network areas understand the causes of the level of reliability that they receive (e.g. due to the long radial feeders in remote locations);
- rural customers and stakeholders would like to see a more robust network supplying their communities; and

- 89% of customers surveyed supported upgrading and reinforcing areas of the network that are impacted by local demand, the environment, and the type of supply to the area.

Customer surveys have indicated that customers are generally satisfied with current levels of network reliability. However, there are pockets of customer who experience very poor levels of reliability performance. The ESCoSA consumer preferences survey (2002) that established the form of the current service standards framework determined that customers were willing to fund improvements in reliability to those customers who had poor performance. This finding was reinforced by SA Power Networks' CEP which indicated that 88% of customers support further protecting the network to harden against lightning and storms. In accordance with the NER Rules (6.5.7 (e)), this business case is consistent with the need to address these reliability concerns expressed by customers, with regard to the performance on these low reliability feeders.

4. Business Case Objectives

4.1 Objectives

The business case objectives are as follows:

- In accordance with the NER 6.5.7 (e), this business case seeks to address the concerns of electricity consumers supplied by low reliability feeders where no STPIS incentive exists (due to the low number of customers impacted and the proportionally significant rectification costs); and

- Manage / reinforce reliability performance of the identified low reliability feeders, which have been on the low reliability feeder list for three consecutive years, by partly restoring the network performance to bring it closer to the average regional service standards.

SA Power Networks has developed this program in response to the low reliability performance of those identified feeders, and the concerns of electricity consumers as identified in the course of our engagement with electricity customers as described in the National Electricity Rules 6.5.7 (e).

This business case has also been developed in line with our Corporate Policy for Asset Management authorised by General Manager Network Management and our Asset Management Plan (**Manual 15**).

4.2 Relationship to Business Strategies and Programs

The project contributes to achievement of strategic objectives as described below.

Table 1 - Contribution to corporate strategic objectives

Corporate Strategic Objective	Contribution
Delivering on the needs of our shareholders, by achieving our target returns, maintaining the business' risk profile, and protecting the long term value of the business	This program is expected to maintain SA Power Networks' risk profile.
Providing customers with safe, reliable, value for money electricity distribution services, and information that meets their needs	This program is expected to manage / reinforce reliability performance of the selected feeders and is the least cost means of arresting the continued poor network performance experienced by our worst served customers.
Maintaining our business standing in the community as an exemplary corporate citizen of South Australia	This program is expected to support SA Power Networks standing in the affected feeders / communities by helping to return the reliability performance of specific feeders closer to the average regional service standards.

Corporate Strategic Objective	Contribution
Ensuring that our workforce is safe, skilled and committed, and that our resourcing arrangements can meet our work program needs	This program will reduce the frequency that our employees operate in relatively hostile and difficult working conditions.
Maintenance and development of key capabilities that will help sustain our success into the future	Not applicable.

Table 2 - Contribution to corporate core areas of focus

Corporate Core Areas of Focus	Contribution
Energised and responsive customer service	Positive
Excellence in asset management and delivery of service	Positive
Growth through leveraging our capabilities	Not applicable
Investing in our people, assets and systems	Not applicable

4.3 Relationship to National Electricity Rules Expenditure Objectives

Table 3 - Contribution to the National Electricity Rules expenditure objectives

National Expenditure Objectives	Contribution
Meet or manage expected demand over the period	Not applicable.
Comply with regulatory obligations	In submitting its regulatory proposal, SA Power Networks must satisfy the AER of the extent to which the capital expenditure forecast includes expenditure to address the concerns of electricity consumers as identified in the course of engagement with electricity consumers. This program seeks to directly address this requirement and also manage the performance of feeders that meet ESCoSA's definition of a low reliability feeder.
Maintain the quality, reliability and security of supply of services provided by SA Power Networks	This program will manage/reinforce the reliability performance of the selected low reliability feeders.
Maintain the reliability and security of the distribution system i.e. the electricity networks	Not applicable

4.4 Meeting the National Electricity Rules Expenditure Criteria

The costs estimated to achieve this project represent efficient and prudent expenditure as detailed below.

Table 4 - Activities to Meet the National Electricity Rules expenditure criteria

National Expenditure Criteria	Activity
Efficient cost of achieving the objective(s)	All estimated costs have been calculated based on actual historic costs. Where possible competitive prices have been obtained. Costs are considered to be efficient based on historical expenditure.
Cost of a prudent operator	The planned scope of works incorporates a set of highly targeted and prioritised strategies from which optimised cost effective solutions are selected. SA Power Networks' personnel also have regard to industry developments to ensure our practices are in line with good industry practice.
Realistic expectation of forecast and cost inputs	Forecast reliability outcomes and benefits have been estimated by analysing our reliability performance since 2009/10 using the standard IEEE MED exclusion method (not the superseded Box-Cox method) and assessing the improvement that would have occurred if the proposed programs had been in place across this period.

5. Project Scope

The scope of the low reliability feeders program is to manage and reinforce the reliability performance of 24 identified low reliability feeders which have appeared on the low reliability feeder list in excess of two consecutive years.

This will be achieved by a combination of strategies including:

- re-insulating vulnerable sections of overhead 11 kV power lines with polymeric insulators to minimise insulator failures from the impact of lightning strikes;
- installation of additional reclosers where appropriate;
- alternative network asset configuration / standards to reduce supply interruptions related to vegetation impacts from outside the prescribed clearance zone; and
- Installation of overvoltage protection at vulnerable locations.

Feeders were selected for this project based on the criteria that their reliability performance had exceeded 2.1 times the regional SAIDI service standard for the three years commencing 2009/10.

Using this criterion 31 feeders were categorised as low reliability feeders and of these, 24 have been selected for this program. Six of the remaining feeders have been addressed through the ongoing business as usual reliability program to maintain performance, or their performance is expected to return closer to historical overall levels due to reliability solutions implemented on the upstream network supplying them. The remaining feeder (GU34 – Springton 19kV SWER) is targeted for a micro-grid trial.

Sections of the feeders to be reinforced were selected based on the recorded historical fault locations.

The net annual STPIS impact has been calculated (+0.05% of revenue or approximately +$350k p.a.). SA Power Networks won't materially benefit financially from this program, further any expected benefits will be largely offset by the STPIS penalties expected with the 'hardening the network' program, as explained in Appendix A.

6. Business Case Options

The two options considered were:

1. Do Nothing. Reliability performance of these worst served customers would be expected to continue to appear on the low reliability feeder list; and

2. Invest to manage / reinforce the reliability performance of the identified feeders, to:

    - partly restore their reliability performance to bring it closer to the average regional service standards, in line with community expectations;

    - improve the experience of some of our consistently worst served customers; and

    - endeavour to meet customer and ESCoSA expectations.

It is recommended Option 2 – reinforce low reliability feeders be approved for the amount of $8.6 (June 2015, $ million) to implement initiatives to reinforce the low reliability feeders over the 2015-20 RCP.

6.1 Option 1 – Do Nothing

6.1.1 Delivery Costs

Not Applicable as option one is to do nothing.

6.1.2 Expected Benefits

No benefits are expected for this option.

6.1.3 Expected Disbenefits

Table 5 - Expected disbenefits

Disbenefit	Consequence outcome (Value, Measure)
Reliability performance of these low reliability feeders will continue at historical levels Customer preferences are revealed through our CEP will be met	Possible adverse consequences include: • Poor customer service • Potential intervention by the technical regulator • Adverse publicity from customers, media and industry.

6.1.4 Timescale

Not applicable as option 1 is to do nothing.

6.1.5 Major Business Risks

Major business risks of not proceeding with this project are as follows.

Table 6 - Major business risks of not proceeding with the project

Risk ID	Risk Description (Risk Line Item)	Consequence Description	Inherent Likelihood	Inherent Consequences	Risk Rating
1.1	Reliability performance not meeting EDC targets	• Poor customer service • Regulatory intervention • Customer complaints • Media attention	Likely	Minor	Medium
1.2	Detriment to customer service reputation	Negative focus on and additional scrutiny of SA Power Networks' performance	Likely	Minor	Medium

6.2 Option 2 – Reinforce low reliability feeders

6.2.1 Delivery Costs

The table below is a summary of the program delivery costs. Please refer to the capital evaluation in Appendix B for a detailed view of these costs.

To achieve the specified objectives, a budget of $8.6 (June 2015, $ million) has been estimated over the 2015-20 RCP to reinforce 24 low performing feeders. The total is comprised as follows:

Table 7 - Delivery costs

Reliability improvement	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Reinforce low reliability feeders	1.0	1.4	1.8	2.2	2.2	**8.6**

6.2.2 Delivery Cost Assumptions

The estimated cost of delivery of this program has been estimated based on historical costs of doing similar work in the recent past.

Other assumptions include:

- Levels of expenditure between mitigation categories may vary from year to year based on an annual review of performance trends as are apportioned towards the worst served customers; and
- Cost estimates are derived using a zero based approach from unit costs for each mitigation solution to determine the overall cost and number of projects.

6.2.3 Expected Benefits

The following benefits are expected:

Table 8 - Expected benefits

Benefit Type	Benefit Effect	Benefit	Measure	Date Benefit Expected	Value
Reliability Customer Benefit (VCR)	Address the reliability concerns expressed by consumers throughout our Customer Engagement Program	Customers experience improves	Customer VCR benefit	Progressively from 1/1/2016	Estimated at $618k p.a.
Reliability Benefit (STPIS)	Fewer supply interruptions on some non-MED valued by increased STPIS benefit	STPIS benefit based on reduced impact of supply interruptions	Using normal reliability reporting systems based on the estimated number of supply interruptions mitigated compared to actual performance between 2009/10 and 2013/14 using the standard IEEE MED exclusion method (not the superseded Box-Cox method)	Progressively from 1/7/2016	Estimated at $ 350k p.a. (+0.05% p.a.)

Based on financial modelling, it is not economic for SA Power Networks to invest in this program of works as the NPV is a cost of $6.1 million (i.e. the benefit is -$6.1 June 15, $ million). However, this program is considered necessary to address the concerns of electricity customers as identified by SA Power Networks in the course of our CEP (in accordance with the National Electricity Rules in 6.5.7 (e)). Refer to Appendix B for the capital evaluation.

The assessment suggests that this project is likely to deliver on average an overall SAIDI improvement of 0.9 minutes p.a. The net result in underlying SAIDI (i.e. excludes MEDs) is a slight improvement of 0.7 minutes p.a. (i.e. decrease in SAIDI) and a slight improvement in SAIFI of 0.003 interruptions p.a. The overall result is a small STPIS benefit of approximately +$350k p.a (+0.05%).

Detailed analysis has been undertaken to determine the likely effect of the proposed remediation works on the 24 worst performing feeders. The analysis was based on forecasting the proposed SAIDI and SAIFI changes on those communities and then subtracting the forecast performance from the actual performance over the period from 2009/10 to 2013/14. The findings were then assessed against the projected STPIS impacts. The results of this analysis are summarised in Table 9.

Table 9 - Analysis of impacts of the low reliability feeder program

	Do nothing	Post program	Impact
Overall Av. SAIDI (incl. MEDs) (minutes)	231.5	230.5	0.9
Underlying Av. SAIDI (excl. MEDs) (minutes)	161.1	160.5	0.7
Overall Av. SAIFI (incl. MEDs) (number)	1.718	1.715	0.003
Underlying Av. SAIFI (excl. MEDs) (number)	1.477	1.474	0.003

Based on our modelling using the standard IEEE exclusion method (not the superseded Box-Cox method), it is forecast that SA Power Networks will marginally benefit from the STPIS with an annual revenue increase of +0.05% per annum. However, this benefit will be offset by the financial penalties from the hardening the network program (ie -0.06%). The impact on reliability from all improvement programs is discussed further in Appendix A - Combined impact of reliability improvement programs.

In its Preliminary Determination, the AER was not satisfied that there is a positive VCR cost-benefit for this program. Assuming benefits to customers are progressively realised over the 2015-20 RCP and then continue for another 30 years, the low reliability feeders program has a slightly less than neutral outcome (ie the benefits are $0.1 million less than the cost), based on the latest AEMO VCR values.

Given the outcome of the low reliability feeders program is financially neutral, SA Power Networks is of the view that it is unacceptable for those customers supplied by the 24 worst performing feeders to continue to be disadvantaged by reliability levels significantly below regional service targets. This is consistent with the findings from our CEP and ESCoSA's expectation that the worst performing feeder reliability performance should not deteriorate further, but rather return to the mandated regional targets.

6.2.4 Timescale

The program is planned to be undertaken over the entire 2015-20 RCP. Its benefits will be felt progressively as each part of the program is delivered.

Table 10 - Project timescale

Timescale Activity	Start Date	End Date
Start and end dates of the project	1/01/2016	30/6/2020
Period/Date when business can first expect to accrue the benefits	1/07/2016	Ongoing

6.2.5 Major Business Risks

The residual business risks of this option are as follows.

Table 11 - Major business risks associated with Option 2

Risk ID	Risk Description (Risk Line Item)	Consequence Description	Inherent Likelihood	Inherent Consequences	Risk Rating
2.1	Detriment to customer service and reputation caused by poor reliability performance	Partly return / restore performance closer to average reliability levels and minimise the likelihood of customer complaints	Unlikely	Minor	Low
2.2	Safety of field crews responding to outages, often in adverse weather conditions, and safety of the public	Fewer outages reduce the safety risk to crews and the public (e.g. by reducing the number of wires down)	Possible	Minor	Low

7. Investment Appraisal

The investment analysis is summarised in the Table 12 below.

Table 12 – Investment appraisal

	Low Reliability Feeders
CAPEX (5 year) ($million)	$8.6
Overall SAIDI improvement (mins.) p.a.	0.9
Overall SAIFI improvement (int.) p.a.	0.003
Underlying SAIDI improvement (mins.) p.a.	0.7
Underlying SAIFI improvement (int.) p.a.	0.003
STPIS Benefit ($M) p.a.	+$0.35 (+0.05%)
VCR Benefit to Customers ($M) p.a.	+$0.62
NPV (SAPN perspective) ($M)	-$6.1
NPV (Customer perspective) ($M)	-$0.1

8. Recommendation

It is recommended that funding be endorsed for Option 2, with an allocation of $8.6 (June 2015, $ million) in capital expenditure over the 2015-20 RCP to reinforce SA Power Networks' low reliability feeders.

Appendix A - Combined impact of reliability improvement programs

In its Preliminary Determination, the AER requested further information on whether SA Power Networks' cost-benefit analysis of the hardening the network program takes into account the new definition of MEDs.

SA Power Networks confirms the standard IEEE exclusion method was used to calculate MEDs, not the superseded Box-Cox method.

Table 13 provides forecasts of the average annual overall impact on SAIDI and SAIFI, and the impact on SAIDI and SAIFI excluding MEDs, as a combined result of our proposed reliability programs (including the hardening the network, low reliability feeders, Hawker-Elliston and micro-grid trial programs).

Table 13 - Combined reliability programs impact on SAIDI and SAIFI

Reliability improvement pa	Hardening the network	Low reliability feeders	Remote communities	Micro-grid	Total
Overall SAIDI (minutes)	16.89	0.94	0.35	0.12	**18.31**
Overall SAIFI (number)	0.074	0.003	0.001	0.001	**0.079**
Underlying SAIDI (excl MEDs) (minutes)	(1.48)	0.68	0.32	0.12	**(0.36)**
Underlying SAIFI (excl MEDs) (number)	0.004	0.003	0.001	0.001	**0.008**

If these programs had been implemented for the entirety of the 2010-15 RCP, our analysis indicates the average overall annual SAIDI (including MEDs), would have been 18.3 minutes lower (being a better outcome for customers). This is less than one third of the average 60 minute increase that all customers have experienced in the 2010-15 RCP.

Further, we note that 15.2 minutes of those 18.3 minutes would have been associated with MEDs. Our analysis demonstrates that four MEDs in the analysed period would no longer be classified as MEDs if these reliability programs had been implemented. The average impact of these four days no longer being classified as MEDs would slightly increase (worsen) the underlying SAIDI (excluding MEDs) performance by 3.5 minutes.

However, combining the 3.1 minute improvement (18.3 minus 15.2 minutes) with the 3.5 minute decline, results in an overall decline[2] in our underlying reliability performance of 0.4 minutes per year.

[2] The decline in underlying SAIDI is because four days which were previously classified as MEDs would not have been classified as MEDs and consequently the interruptions that would still occur on those days that were previously excluded, would now be included in the underlying reliability.

That is, based on our analysis, the combined programs will improve the experience of some of our worst served customers, in line with their preferences, but there will be no benefit to SA Power Networks because there will be no improvement in the underlying reliability performance.

Overall, the proposed expenditure for the hardening the network, low reliability feeders and Hawker-Elliston programs has a net present value over a 35 year period to customers of $54 million, using the latest VCR values from AEMO.

The overall STPIS outcome from implementing the three proposed expenditure programs is neutral with potential for a slight positive outcome of about 0.02% of revenue. (If all programs had been in place for the full 2010-15 RCP, the overall impact on the STPIS is a marginal increase of 0.02% of revenue per annum. This is equivalent to $0.182 million per year for the 2015-20 RCP.)

The overall STPIS outcome, shown in Table 14, is the result of four days previously classified as MEDs no longer being classified as MEDs.

Table 14 - Annual average reliability impacts from four programs of works

	Urban		Rural Short		Rural long		Dist System	
	SAIDI	SAIFI	SAIDI	SAIFI	SAIDI	SAIFI	SAIDI	SAIFI
Hardening the Network	(1.00)	0.007	(1.42)	(0.003)	(3.75)	(0.002)	(1.48)	0.004
Low reliability	0.00	0.000	2.48	0.013	2.02	0.006	0.68	0.003
Remote communities	-	-	0.53	0.002	1.51	0.003	0.32	0.001
Micro Grid	-	-	-	-	0.74	0.006	0.12	0.001
Total	(1.00)	0.007	1.60	0.012	0.52	0.012	(0.36)	0.008

Appendix B – Capital evaluation

CAPITAL EVALUATION

Project Name Low reliability feeders

Evaluation Factors

Discount Rate (Real Pre-Tax) 7.09% Policy rate for investment in core business assets

Base Year Ending 30 June 2015 Specify Date

Financial Analysis	0	1	2	3	4	5	6	7	8	9
Year ended 31/12:	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**
Costs:										
Low reliability feeders	1,000	1,400	1,800	2,200	2,200	0	0	0	0	0
Total Capital	1,000	1,400	1,800	2,200	2,200	0	0	0	0	0
		0	0	0	0	0	0	0	0	0
Total operating	0	0	0	0	0	0	0	0	0	0
Total Costs	**1,000**	**1,400**	**1,800**	**2,200**	**2,200**	**0**	**0**	**0**	**0**	**0**
Benefits:										
VCR benefit	0	70	140	210	280	350	280	210	140	70
Total Benefits	**0**	**70**	**140**	**210**	**280**	**350**	**280**	**210**	**140**	**70**
Net Cash Flow	**-1,000**	**-1,330**	**-1,660**	**-1,990**	**-1,920**	**350**	**280**	**210**	**140**	**70**

Pre Tax:	
Net Present Value	**-$6,087**

Attachment G.7 - Reliability – Low reliability feeders

CAPITAL EVALUATION - Customer perspective

Project Name Low reliability feeders

Evaluation Factors

Discount Rate (Real Pre-Tax) 7.09% Policy rate for investment in core business assets

Base Year Ending 30 June 2015 Specify Date

Financial Analysis	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Year ended 31/12:	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029/30**	**2030/31**	**2031/32**	**2032/33**	**2033/34**	**2034/35**	**2035/36**	**2036/37**	**2037/38**	**2038/39**	**2039/40**	**2040/41**	**2041/42**	**2042/43**	**2043/44**	**2044/45**	**2045/46**	**2046/47**	**2047/48**	**2048/49**	**2049/50**	**2050/51**
Costs:																																				
Low reliability feeders	1,000	1,400	1,800	2,200	2,200	0	0	0	0	0	0																									
Total Capital	1,000	1,400	1,800	2,200	2,200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total operating	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Costs	**1,000**	**1,400**	**1,800**	**2,200**	**2,200**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Benefits:																																				
VCR benefit	93	216	340	463	587	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618	618
Total Benefits	**93**	**216**	**340**	**463**	**587**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**
Net Cash Flow	**-907**	**-1,184**	**-1,460**	**-1,737**	**-1,613**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**	**618**

Pre Tax:	
Net Present Value	**-$91**