

NEED/OPPORTUNITY STATEMENT (NOS)

50V Rack Power Supply Condition

NOS- 000000001361 revision 3.0



Ellipse project no.: P0007990

TRIM file: [TRIM No]

Project reason: Capability - Asset Replacement for end of life condition

Project category: Prescribed - Replacement

Approvals

Author	Hazem Khamis	Secondary Systems Strategist
Endorsed	Mark Jones	Secondary Systems and Communications Asset Manager
Approved	Lance Wee	M/Asset Strategy
Date submitted for approval	17 November 2016	

Change history

Revision	Date	Amendment
0	31 May 2016	Initial issue
1	17 October 2016	Update to 2016/17 dollars
2	17 November 2016	Update to format

1. Background

50V Rack Power Supply (RPS) systems are used throughout the NSW network to provide a continuous supply of power to communications equipment during a loss of primary supply across the majority of high voltage (HV) sites and all Radio Repeater Sites (RRS). The availability of an uninterruptible power supply is crucial for communications systems particularly during a black event. There are currently 213 RPS systems installed within TransGrid's network with install dates between 2002 and 2016.

The assets investigated under this need are aged RPS systems that have reached the end of their technical life resulting in reduced capabilities to meet backup supply performance requirements.

The use of RPS systems to provide backup power supplies during an outage event for communications are a continuing requirement of the Australian Energy Regulator (AER) as outlined in the National Electricity Rules (NER). Backup power supply systems are required into the foreseeable future.

2. Need/opportunity

The following RPS systems are covered by this need:

Voltage Level	Battery Systems	Number of Systems
HV and RRS Site	RPS	213

The risk cost associated with the 213 RPS systems is \$19.1m per annum. The most significant element of concern is the reliability consequence associated with the failure of a network segment due to malfunction of the RPS resulting in the loss of the critical communications links that facilitate the operation of the network. The communications system assists in protecting the network at the highest voltage levels and duplication is a requirement of the NER. It is estimated that 8 hours would be required to recover any loss of load occurring while communications are unavailable. The risk costs are based on 2015/16 probabilities of failure derived from Ellipse historical failure data. These probabilities are forecast to continue increasing over the coming years as the assets continue past their expected life.

3. Related needs/opportunities

NIL

4. Recommendation

It is recommended that options be considered to address the identified need/opportunity.

Attachment 1 – Risk costs summary

Summary of results is attached below. Refer to supporting document in PDGS for full risk assessment.

Current Option Assessment - Risk Summary

Project Name: 50V Rack Power Supply Condition

Option Name: 1361 - Base Case

Option Assessment Name: 1361 - Base Case - Assessment 1

Rev Reset Period: Next (2018-23)



Major Component	No.	Minor Component	Self Hazardous Event	LoC x CoF (\$M)	Failure Mechanism	NoxLoC xCoF (\$M)	PoF (Yr 1)	Total Risk (\$M)	Risk (\$M) (Rel)	Risk (\$M) (Op)	Risk (\$M) (Fin)	Risk (\$M) (Peo)	Risk (\$M) (Env)	Risk (\$M) (Rep)
Low Voltage DC Supply	213	DC Low Voltage Board/Panel/Box	Uncontrolled Electrical Contact / Discharge (Low Voltage DC Supply)	\$0.50	Failure	\$106.94	8.70%	\$9.30	\$8.53		\$0.70	\$0.08	\$0.00	\$0.00
Low Voltage DC Supply	213	DC Low Voltage Board/Panel/Box	Unplanned Outage - HV (Low Voltage DC Supply)	\$0.53	Failure	\$113.16	8.70%	\$9.84	\$8.53		\$1.32			\$0.00
								\$19.15	\$17.06		\$2.01	\$0.08	\$0.00	\$0.00

Total VCR Risk: \$17.06 Total ENS Risk: \$0.00