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Project description

This project is to install diesel generator sets in substations that may be required to recover from a system black event. The DGS allows substation equipment to be switched remotely during a system black event - this reduces time to recover as it avoids time taken to undertake manual switching. The project also allows for installation of DGS sockets at non critical sites to allow for mobile DGS units to be deployed where battery storage limits may be exceeded - therefore reducing time to restore those sites when supply is returned.

Project options

Base case	Continue as is - no DGS installation undertaken. As most disconnectors are AC motor operated, manual operation will be required during a system black event.
Option 1	Installation of a DGS unit at a substation will provide AC supply to the substation and will allow all functions to be remotely operated during a system black event. Installation of DGS plugs for mobile units reduces the time to restore non critical sites and associated loads by avoiding time taken to recharge battery supplies.
Option 2	Delay of option 1 until 2024-2028

Key modelling assumptions

Financial year runs from 1 July to 30 June.

Real 2018 \$ are used for all monetary values unless otherwise stated.

Inputs to the model

Parameter/Input	Description	Source
Discount rate	Real pre-tax discount rate	ElectraNet estimate
Current financial year	Year to start analysis	When the capital investment is due to occur for the project
Time horizon	Length of time under consideration	Total project life including useful life and if the project occurred in the next regulatory period
Capital costs	Amount of capital investment in real terms for each project option	Estimated capital costs in the estimate from project center
Useful life	Length of time capital investments are expected to provide service	Useful life estimated from orginal economic justification on project center
Maintenance Cost	Annual amount of estimated maintenance in real terms	See Maintenance & Risk Cost
Risk Cost	Annual amount of estimated corrective maintenance in real terms	See Maintenance & Risk Cost

## 10 Inputs

### User provided parameters and inputs to the model

## Inputs

## General parameter inputs

Parameter	Unit	Value	Source	Sensitivities		
				Low	Medium	High
Inflation rate	Percentage	2.00%	RBA	1.50%	2.00%	3.00%
Discount rate (real, pre-tax): estimate	Percentage	6.00%	ElectraNet estimate	4.50%	6.00%	8.50%
Discount rate (real, pre-tax): lower bound	Percentage	4.50%	ElectraNet estimate			
First year of analysis	Year	2019	Current financial year			
Base financial year for analysis	Year	2018	Base year			
Time horizon	Years	20				

## Capital cost

Sensitivities			Comment
Low	Medium	High	
70%	100%	130%	Standard sensitivities used

### Capital cost inputs

Option	Asset	Amount	Start year	End year	Commission year	Asset life
Option 1	Substation Diesel Sets	7,541,179	2019	2023	2024	20
Option 2	Substation Diesel Sets	7,541,179	2024	2028	2029	20

## Costs inputs

Cost type	Cash/Non-cash	Percentage			Comment
		Low	Medium	High	
Annual Risk Cost	Cash	50%	80%	100%	Standard sensitivities used
Maintenance Costs	Cash	50%	80%	100%	

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R0 CBA Results

Sensitivities, results and rankings

Input Summary

Parameter selection for sensitivity analysisDiscount rate

Scenario parameters		Discount rate scenario		
	Units	Low	Medium	High
Assumed scenario weighting	% weighting	33%	33%	33%
Discount rate	% real, pre-tax	4.50%	6.00%	8.50%
Capital cost	% of estimate	100%	100%	100%

Cost selection for sensitivity analysisMaintenance Costs

Scenario cost inputs		Maintenance Costs scenario		
	Units	Low	Medium	High
Annual Risk Cost	% of estimate	80.0%	80.0%	80.0%
Maintenance Costs	% of estimate	50.0%	80.0%	100.0%

Cost Benefit Analysis Results (Quantitative)

Output summaryNet present value of benefits

NPV results			Scenario		Weighted NPV
Option	Units	Low	Medium	High	
Option 1	2018 \$	6,305,026	4,538,816	2,468,669	4,437,504
Option 2	2018 \$	3,848,362	2,599,131	1,244,751	2,564,082

Output summaryRanking of options

Ranking of options			Scenario		Weighted ranking
Option	Units	Low	Medium	High	
Option 1	2018 \$	1	1	1	1
Option 2	2018 \$	2	2	2	2