

# Demand Side Management: 2016-20 Price Reset

## CitiPower and Powercor

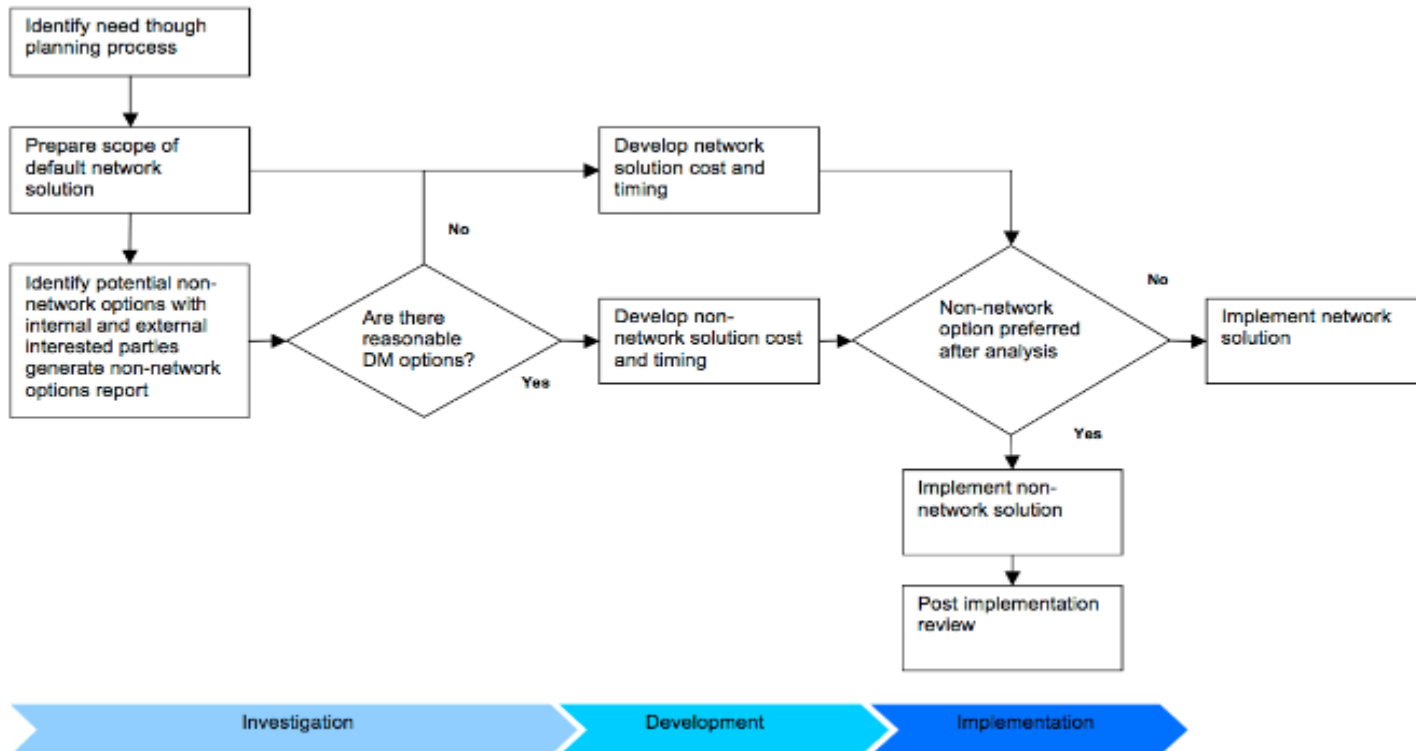
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# Non-network options process

The focus is on the most efficient outcomes for customers, regardless of the options. Strict requirements of our DAPR's, Demand Side Engagement Strategy, and RIT-D Rules.



# Regulatory Tests Completed for expenditure within the 2016-20 period

Project name	Test type	Cost (\$ million, 2015)	Date of final report(s)	Material project no.
<b>CitiPower</b>				
<b>Brunswick Terminal Station upgrade, and CBD Security of Supply</b>	Regulatory Test	30.8	14 August 2008 31 May 2011  April 2007	AUG 11
<b>MP to BQ and WP 11kV feeders (CBD area)</b>	Regulatory Test	6.99	July 2014	-

Project name	Test type	Cost (\$ million, 2015)	Date of final report
<b>Powercor</b>			
<b>Deer Park terminal station</b>	Regulatory Test	16.01	1 May 2012
<b>New Truganina zone substation</b>	Regulatory Test	12.78	17 March 2014
<b>Merbein new transformer</b>	Regulatory Test	5.49	11 April 2014
<b>Geelong East upgraded transformers</b>	Regulatory Test	8.54	12 June 2014
<b>New Torquay zone substation</b>	Regulatory Test	14.36	2 May 2014

# RIT-D Tests forecast for 2016-20

The Tables below outline the projects costing more than \$5 million, explaining when a RIT-D is due to be undertaken, or where a RIT-D will not be undertaken as the project falls within the exceptions set out in clause 5.17.3 of the Rules.

Project name	Drivers	Cost (\$ million, 2015)	Proposed RIT-D start date	Material project no.
<b>CitiPower</b>				
<b>WMTS 22kV decommissioning</b>	Replacement	61.0*	N/A	AUG 10
<b>Establish WP zone substation</b>	Replacement	See AUG 11	N/A	See AUG 11
<b>NR reactors</b>	Fault levels	4.0	Commenced	AUG 12

Project name	Drivers	Cost (\$ million, 2015)	Proposed RIT-D start date	Material project no.
<b>Powercor</b>				
<b>Melton new transformer</b>	Demand	4.9	Commenced	AUG 26
<b>TNA third transformer</b>	Demand	8.2	2016	AUG 27

\* Includes all load transfers

# Regulatory Test Example: Geelong East (GLE)

Serious consideration of an option with a network support agreement for embedded generation in the Geelong area. Worked with the non-network proponent over many months on various options.

Option		PV total market benefit (\$M)	PV total direct cost (\$M)	PV net market benefit (\$M)
1	Do nothing (base case)	0	0	0
2	GLE Transformer Upgrades in 2016 and 2017	124.3	9.5	114.8
3	GLE Transformer Upgrades in 2016 and 2019	122.0	8.8	113.1
4	GLE Transformer Upgrades in 2016 and 2025. Proponent network support agreement (N-1)	125.1	12.7	112.4
5	GLE Transformer Upgrades in 2020 and 2025. Proponent network support agreement (N)	125.5	13.2	112.3

Note: Analysis using 2014 revised VCR values

# Consideration of non-network approaches to reducing expenditure.

## Our Regulatory Proposals also factor in the following:

- Top down econometric demand forecasts factoring in:
  - an increase in uptake of ToU Tariffs.
  - increase in rooftop solar PV roll-out
  - continued impact of energy efficiency policies
- Diversification of hot water load switching via AMI meters
- Probabilistic planning, which is an efficient practice, naturally deferring augmentation expenditure compared to deterministic planning:
  - This practice is to manage network risk, rather than build-out the risk.

# Current DMIS Initiative: Buninyong Big Battery (BBB)

## CP & PAL:

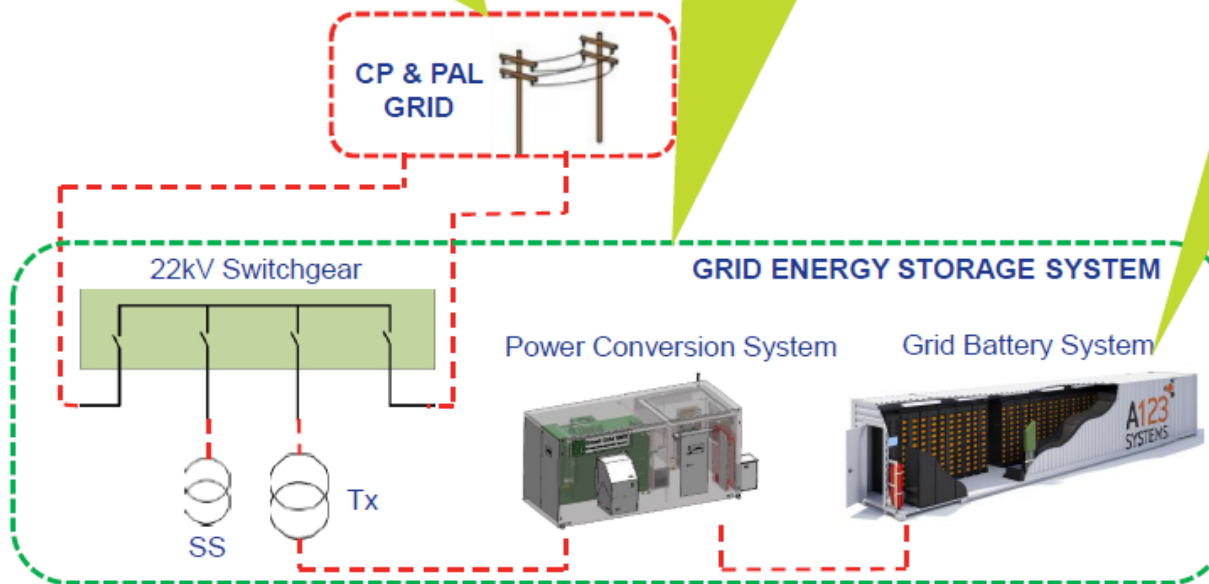
- Scope project
- Integrate GESS with network
- Network protection and control schemes
- Design and project manage

## INTEGRATOR:

- Control and communications
- Power conversion system (PCS)
- Communications between PCS & BMS
- Support grid interface and control

## BATTERY SUPPLIER:

- Manufacture batteries
- Battery Management System (BMS)
- Battery protection and safety systems



## SPECIFICATIONS:

- Power and Energy: 2MW/1hr
- Battery chemistry: Lithium
- Container size: 20ft or 40ft
- Land: 35M x 15M

# Current DMIS Initiative: CitiPower Embedded Generation Constraints

Series of investigations and options analysis of a wide range of solutions to enable fault level headroom to enable additional EG's to parallel connect with the network.

- Re-arranging the transmission network within the LaTrobe Valley (need to wait for brown coal generators to be mothballed?)
- Splitting zone substation busses
- Opening some zsub transformer circuit breakers
- Fault current limiters, some employing solid state interfaces

Good learnings, but no 'one-size fits all'.

