

# ESCRI-SA



Knowledge Sharing Reference  
Group  
Meeting #3

AGL – Commercial Operations

# Registration

## Issues

- Registration application for raise and lower contingency FCAS services on both DUID's was rejected. Generator raise and load lower was accepted, slightly reducing AGL's regulation FCAS revenue capability.

## Successes

- From the Market Operator perspective, the negotiated access standards maximizes economical use of stored energy.

## Future Considerations

- When AEMO's Dispatch Engine is capable of bi-directional energy dispatches, energy storage assets will be able to exercise their full capability in terms of contingency FCAS MW swings.
- Consideration of regulation FCAS to charge the battery.

# Commissioning

## Issues

- The testing schedule was constrained by HV switching programs, putting pressure on site staff to make maximal use of time in a project with a high component of R&D.
- Bidding, especially during hold point testing where dispatches change minute-to-minute, is difficult.

## Successes

- A small, unplanned, FFR response was observed during commissioning.

## Future Considerations

- When load is required for islanding tests, load banks should be part of the commissioning plan.
- AEMO to provide consideration of better ways for Asset Operators to bid and dispatch small generators, such as batteries, during commissioning and hold point testing.

# SCADA and Operations

## Issues

- The importance of AGL's input to SCADA detailed design was diminished by broader project challenges, resulting in suboptimal implementation, satisfying only the *minimum requirements* for market operation.

## Successes

- Once commercial operation has commenced, the battery should be able to operate autonomously, with semi-automated bidding and fully automated energy and contingency FCAS dispatch.
- ElectraNet's network infrastructure should provide robust telecommunications access for AGL to Dalrymple North.
- OEM training was valuable.

## Future Considerations

- Facilitation of direct communication between Asset Operator and OEM during early project stages would streamline SCADA implementation, reduce rework and produce more elegant outcomes.

# Bidding Considerations

# Bidding in the National Electricity Market



The battery will participate in the **Energy** and **FCAS** markets of the NEM

Section 3.8 of the National Electricity Rules sets out the requirements for participation in the dispatch process, including:

- Submit dispatch offers for each 48 trading intervals in the trading day (in advance)
- A **rebid** must be made as soon as practicable after the Market Participant becomes aware of the **change in material conditions** and circumstances on the basis of which it decides to vary its dispatch offer or dispatch bid

Therefore rebids must be submitted as often as every 5 minutes to reflect changes in the state of charge (SOC)

# How do we bid the battery into the market?

Need to rebid Energy Availability, FCAS availability and FCAS trapeziums

**Not practical** to rebid the battery manually every 5 minutes, 24 x7

How will AGL bid the Dalrymple battery:

- Produced an in-house auto re-bidding software
- Took ~3 months, with collaboration across several business units and required up-skilling of IT workforce
- No 'off-the-shelf' software solutions available at this stage that can cater for a battery (some in the pipe-line?)

The AGL software will perform the following:

- Re-calculate availability (energy and FCAS) every 5 minutes based on State of Charge (SOC) and submit to AEMO
- Re-bid availability and/or price bands based on a set of business rules

# Example: 5 minute vs 30 minute settlement

## 5 Minute Settlement

As per rule change **from** 1 July 2021

5 minute settlement			
Dispatch Interval	Price (\$/MWh)	Dispatch (MW)	Revenue /Cost
1	\$ 14,200	30	\$ 35,500
2	-\$ 1,000	30	\$ 2,500
3	-\$ 1,000	30	\$ 2,500
4	-\$ 1,000	30	\$ 2,500
5	\$ 50	-	\$ -
6	\$ 50	-	\$ -
<b>Revenue</b>			<b>\$ 43,000</b>

Discharge  
Charge  
Charge  
Charge  
-  
-

## 30 Minute Settlement

Current process, **until** 1 July 2021

30 minute settlement		
Dispatch Interval	Price (\$/MWh)	Dispatch (MW)
1	\$ 14,200	30
2	-\$ 1,000	30
3	-\$ 1,000	30
4	-\$ 1,000	30
5	\$ 50	-
6	\$ 50	-
<b>Ave Price</b>	<b>\$ 1,883</b>	
<b>Ave MW</b>	<b>- 10.00</b>	
<b>Ave MWh</b>	<b>- 5.00</b>	
<b>Revenue</b>	<b>-\$ 9,417</b>	

Discharge  
Charge  
Charge  
Charge



# How do we manage this risk?

**Aim:** don't charge the battery during a high average price 30-minute trading interval

Example scenario – high price event (e.g. \$14,500) followed by one or more 5 minute dispatch intervals at a low or negative price (e.g. -\$1,000)

Battery would charge based on -\$1,000 5-minute price but would end up paying a high price (e.g. ~\$2,000) based on the average price for the 30 minutes

Solution: Battery bidding system looks at AEMO Pre-Dispatch (price forecast) to determine whether the trading interval is estimated to end up as a high or low price and will adjust bids accordingly

Doesn't cater for all situations but will reduce risk in **common** scenarios

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