



Report into market ancillary service prices above \$5000/MW

**South Australia,
28 August 2017**

15 November 2017

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AER Reference: 62880 - D17/123305

Amendment Record

Version	Date	Pages
1 version for publication	15/11/2017	32

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1 Obligation

The Australian Energy Regulator regulates energy markets and networks under national legislation and rules in eastern and southern Australia, as well as networks in the Northern Territory. Its functions include:

- monitoring wholesale electricity and gas markets to ensure energy businesses comply with the legislation and rules, and taking enforcement action where necessary;
- setting the amount of revenue that network businesses can recover from customers for using networks (electricity poles and wires and gas pipelines) that transport energy;
- regulating retail energy markets in Queensland, New South Wales, South Australia, Tasmania (electricity only), and the ACT;
- operating the Energy Made Easy website, which provides a retail price comparator and other information for energy consumers;
- publishing information on energy markets, including the annual State of the energy market report, to assist participants and the wider community.

The AER is required to monitor significant variations between forecast and actual prices and publish a report where:

- prices for a market ancillary service over a period significantly exceed the relevant spot price for energy; and
- prices for a market ancillary service exceed \$5000/MW for a number of trading intervals within that period.

In accordance with the clause 3.13.7(e) of the National Electricity Rules, the report must:

- describe the significant factors that contributed to the ancillary service prices exceeding \$5000/MW;
- identify any linkages between spot prices in the energy market and ancillary service prices contributing to the occurrence; and
- assess whether rebidding pursuant to clause 3.8.22 contributed to prices exceeding \$5000/MW.

These reports examine the reasons for the high price outcomes—they are not compliance reports. We deal separately with compliance issues that come to our attention during the preparation of these reports.

2 Summary

Lower and raise regulation frequency control ancillary services (regulation services) are used to manage small fluctuations in supply or demand.

On 28 August 2017 the price for local regulation services in South Australia exceeded \$5000/MW for 102 consecutive dispatch intervals, from 10.35 am to 7 pm. This was much higher than the wholesale (or spot) price for electricity in South Australia, which was between \$200-\$400/MWh for the majority of same period (with price spikes around \$2500/MWh at 6.30 pm and 7 pm).

A planned network outage in Victoria affecting the Heywood interconnector started on 28 August at 10.35 am, and ended at 7 pm. This outage put South Australia on a single contingency, which created the risk of South Australia becoming electrically isolated from the National Electricity Market (NEM). To manage this risk, and in line with its procedures, the market operator (AEMO) notified the market that South Australia would be required to source 35 MW of raise and lower regulation services from within the region for the duration of the outage.

On the day before the planned outage, AGL shifted (rebid) capacity from low prices to above \$5000/MW at its Torrens Island power station for 28 August. As a result of its change in offers prices above \$5000/MW were forecast for sustained periods the following day. In the absence of a market response, predicted high prices occurred on 28 August, the day of the planned outage.

3 Analysis

The following sections explain the reasons for the high regulation services prices. To summarise, in response to a planned network outage in Victoria, AEMO imposed the requirement that 35 MW of regulation services be sourced locally in South Australia. Participants only offered 33 MW of regulation service capacity priced less than \$5000/MW and therefore higher priced capacity was needed to meet the requirement. As a result the price for both services reached or exceeded \$10 000/MW for all dispatch intervals from 10.35 am to 7 pm.

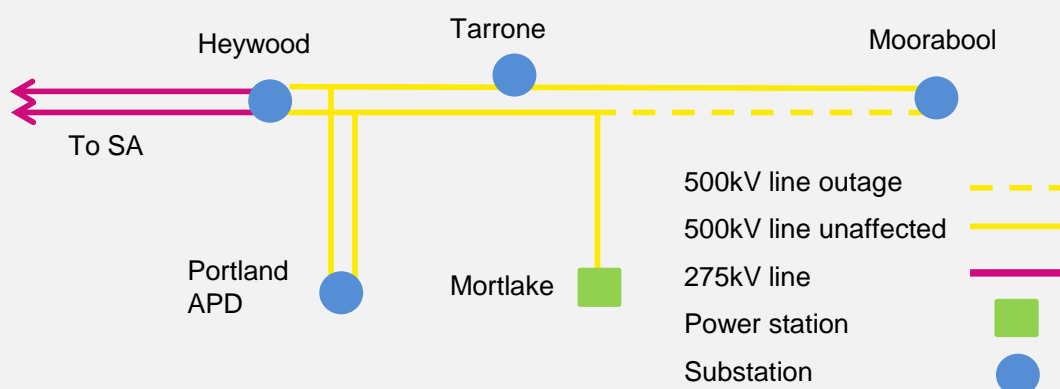
3.1 Planned network outage

AEMO published market notices 58976 (on 8 August 2017) and 59091 (on 25 August 2017, revising the earlier market notice) announcing that there would be an outage on the Moorabool to Mortlake PS 500kV line in Victoria putting South Australia on a single contingency. Under such conditions AEMO requires South Australia to source 35 MW of regulation services locally. Box 1 explains how AEMO manages outages on the Heywood interconnector.

While market notice 59091 (25 August 2017) forecast the outage to start at 10.30 am and finish at 5.30 pm, this was extended on the day, and instead the outage finished at 7 pm.

Box 1: Heywood Interconnector and line outage management

South Australia is electrically connected to Victoria by the Heywood and Murraylink interconnectors. Murraylink is a direct current interconnector that cannot provide FCAS. The Heywood Interconnector is an alternating current high voltage transmission link which can transfer FCAS from the rest of the NEM. The figure below is a simplified representation of the network around the interconnector.



When any one of the four lines going through the Heywood substation is on an outage, the South Australian region is on a single contingency. This means that South Australia is at risk of being electrically isolated from the rest of the NEM as only one line is connecting South Australia to Victoria. When this occurs AEMO invokes constraints requiring 35 MW of local regulation services. This ensures adequate regulation services are immediately available to manage the frequency (around 50Hz) within South Australia if the remaining line trips.

Further details on the 35 MW requirement can be found in Appendix B.

3.2 Regulation FCAS availability, offer prices and price outcomes

This section discusses participants' FCAS offers and price outcomes.

3.2.1 FCAS capacity

Of the 26 power stations (including wind farms) in South Australia only four are registered to provide FCAS. Table 1 shows the power stations that were registered to provide raise and lower regulation FCAS in South Australia on the day and their maximum registered capacity. Table 1 shows each power station, if fully operational, was individually capable of providing the local requirement.

Table 1: Registered maximum regulation FCAS capacity by station

Power Station	Registered Capacity (MW)	
	Lower regulation	Raise regulation
Osborne (Origin Energy)	36	36
Quarantine (Origin Energy)	50	50
Pelican Point (Engie)	100	100
Torrens Island (AGL)	200	260
Total	386	446

On the day Osborne power station and three units at Torrens Island power station were unavailable. So, although the registered capacity is as shown in Table 1, only around 200 MW of lower regulation and around 250 MW of raise regulation was offered by participants.

3.2.2 Forecast prices

Early forecasts the day prior to the outage showed prices for regulation services at around \$300/MW for the duration of the outage. At 3.06 pm the day before the outage, AGL rebid 2 MW of capacity in both services at its Torrens Island power station from \$300/MW to greater than \$10 000/MW. The rebid was effective for the entire day of the scheduled outage. As a result of the rebid, only 33 MW of raise and lower regulation services priced less than \$5000/MW remained, meaning that capacity priced above \$5000/MW would be needed to meet the 35 MW requirement. Consequently, price forecasts for the duration of the outage were around \$10 000/MW.

3.2.3 Price outcomes

Figure 1 and Figure 2 show actual price (purple line)¹ and effective available capacity over the high price period. The (constant) 35 MW requirement is shown as a red line. The blue shaded areas indicate effective available capacity priced below \$5000/MW and effective available capacity priced above \$5000/MW is indicated by the light orange shaded areas. The figures show that, as there was not enough low priced capacity (blue shaded area) to meet the requirement (red line) high priced capacity (orange shaded area) was required resulting in high prices of around \$10 000/MW or above for the duration of the outage (approximately eight and a half hours, or 102 dispatch intervals).

¹ Individual prices are contained in the Price Setter at Appendix F

Figure 1: Lower regulation effective offers, requirement and price

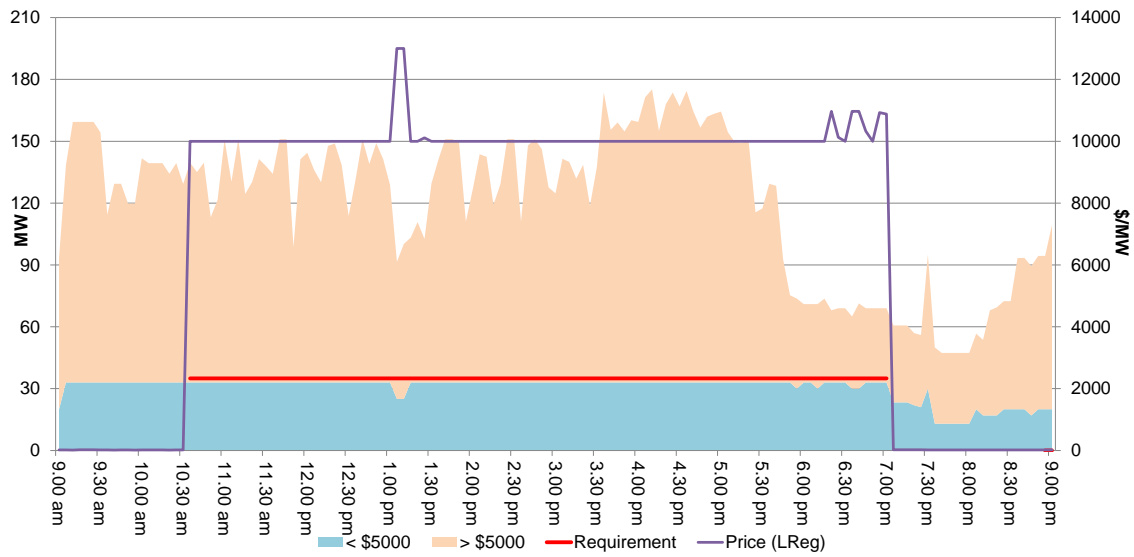
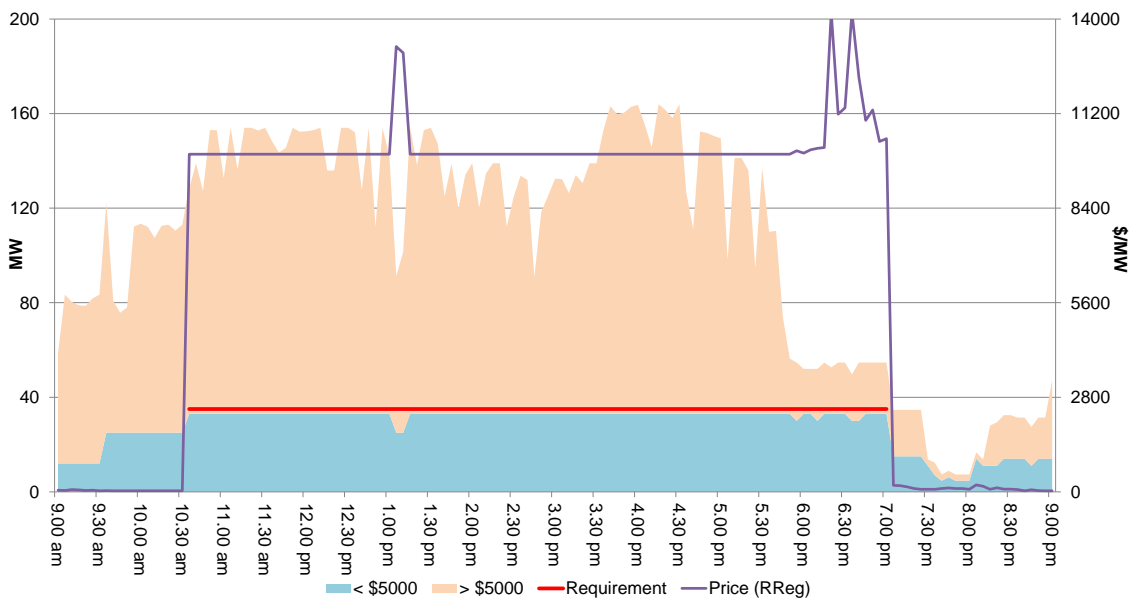


Figure 2: Raise regulation effective offers, requirement and price



3.2.3.1 1.05-1.10 pm price spike

Prices for raise and lower regulation services increased to around \$13 000/MW at 1.05 pm and 1.10 pm, as shown in Figure 1 and Figure 2, when the Automatic Generator Control (AGC) on Engie’s Pelican Point power station became unavailable for 10 minutes.

A power station’s AGC allows it to automatically respond to AEMO’s raise and lower regulation services signals. Generators are only eligible for dispatch for regulation services when their AGC is enabled.

When Pelican Point’s AGC became unavailable, it caused 8 MW of raise and lower regulation services priced at less than \$5000/MW to be removed, resulting in the need for even higher priced capacity to meet the 35 MW requirement. At 1.15 pm the AGC

became available again and prices returned to around \$10 000/MW. The decrease in capacity can be seen in Appendix D (figures D2 a, D2 b, D5 a and D5 b).

3.2.3.2 6 – 7 pm price spikes

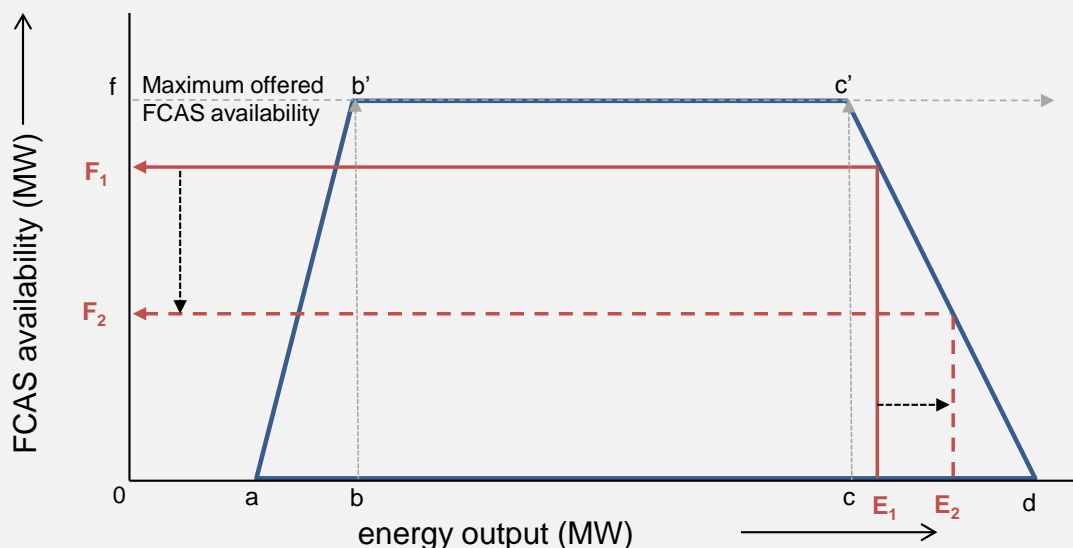
Figure 1 and Figure 2 show a series of price spikes from 6 pm to 7 pm. The spikes were caused by reductions in effective availability of regulation services or co-optimisation of the energy and FCAS markets (both of these concepts are explained in Box 2). The price spikes in regulation services coincided with the five minute price for energy reaching \$13 999/MWh at 6.20 pm and \$10 579/MWh at 6.35 pm.

Box 2: Relationship between generator FCAS and energy offers

Generators must register with AEMO to provide FCAS and offer FCAS capacity in a similar manner to energy into the market.

Participants offer the maximum amount of FCAS (f in the diagram below) and energy, in mega-watts (MW), they are willing to supply across ten price bands, ranging between -\$1000 and \$14 200 for a trading day. Trading days starts at 4 am. Participants also offer the limits at which they can be dispatched in FCAS (a, b, c, d in the diagram below). The relationship between the provision of FCAS and energy determines the effective availability of FCAS. For example in the diagram below, if a generator's energy output is at E_1 then its effective FCAS availability is F_1 . If its output in energy increases to E_2 then its effective FCAS availability drops to F_2 .

For every dispatch interval the National Electricity Market Dispatch Engine (NEMDE) co-optimises market participants' FCAS and energy offers to arrive at the least cost outcome while maintaining system security.



Australian Energy Regulator

November 2017

Appendix A: Explanation of FCAS

Frequency control ancillary services (FCAS) are required to maintain the frequency of the power system within the frequency operating standards. The two general categories of FCAS are:

- Regulation services, which continuously adjust to small changes in demand or supply (changes that cause the frequency to move by only a small amount away from 50 Hz). There are regulation services to increase the frequency (raise regulation or RREG) and services to decrease the frequency (lower regulation or LREG).
- Contingency services, which manage large changes in demand or supply that occur relatively rarely and move the frequency by a large amount. There are three contingency services to increase the frequency and three contingency services to decrease the frequency. Raise contingency FCAS are required to be available to correct frequency excursions that have arisen from a credible contingency event that leads to a decrease in frequency. As these contingency events usually involve step reductions in supply side, the Electricity Rules stipulate that generators pay for these services. Lower contingency FCAS are the services required to be available to correct the frequency excursions that arise from a credible contingency event that leads to an increase in frequency. As these contingency events usually involve step reductions in customer demand, the Electricity Rules stipulate that customers pay for these services.

Participants providing regulation services receive adjusted dispatch targets every 5 minutes via their automatic generation control (AGC) signals from AEMO. Participants are paid through the FCAS markets in accordance with their offered volumes. Their energy production, which may be higher or lower depending on the AGC signals they receive, are settled in accordance with energy market prices.

There are three lower and three raise contingency services:

- fast services, which arrest a frequency deviation within the first six seconds of a contingent event (L6 and R6);
- slow services, which stabilise frequency deviations within sixty seconds of the event (L60/R60); and
- delayed services, which stabilise frequency deviations within five minutes of the event (L5/R5).

Participants offering to provide contingency services are enabled in accordance with the “trapezium” supplied in their offers. While participants will not necessarily be supplying these services until a contingency occurs they are paid in accordance with their enablement.

Frequency Control Ancillary Service Settlement

AEMO settles the FCAS markets on a weekly basis, as follows².

- Regulation FCAS: Cost recovery on a “causer pays” basis using the Causer Pays Procedure³ developed by AEMO in accordance with the appropriate NER procedures.
- Contingency FCAS: Generators pay for Raise Services and customers pay for Lower Services.

The ‘Causer Pays’ Procedure allocates regulation FCAS costs to those market generators, customers and small generation aggregators with facilities that have the metering capable of determining their contribution to frequency deviations at any time.

Every four weeks based on historical data AEMO calculates a causer pays contribution factor for each generator. Broadly, the contribution factor is determined from historical 4 second generator output and frequency information and is a measure of how each generator contributed to managing changes in the system frequency. If a generators’ output changes such that it supports maintaining the system frequency its contribution factor is positive. Conversely, if a generator’s output changes such that it exacerbates a frequency deviation, its contribution factor will be negative. The causer pays contribution factors for a portfolio of generators effectively represent the aggregation of the individual performance of the generators in that portfolio.

Settlement is determined by allocating the FCAS costs incurred in the current period in accordance with the causer pays contribution factor for that portfolio from the preceding period. Thus cost allocation to a participant is not dependent on the amount of energy purchased or consumed in that period but by the performance of that participant in managing system frequency in the previous period.

Consequently a portfolio of generators with a negative factor in a particular period will still pay a share of FCAS costs irrespective of how much it generates in the current period.

Since not all of the costs will be recovered from generators, the residual costs are recovered from market customers (including retailers) in the relevant region, based on the amount of energy each market customer is purchasing.

² For a full description go to <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Data/Ancillary-Services/Ancillary-Services-Payments-and-Recovery>

³ For a full description go to <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Ancillary-services/Ancillary-services-causer-pays-contribution-factors>

Appendix B: Local Frequency Control Ancillary Services

AEMO sets the requirement for FCAS to ensure that the frequency standard (as set by the Reliability Panel) is maintained in the event of step changes in supply or demand that results from credible contingencies. Where a credible contingency results in the loss of an interconnector it is termed a “separation event”.

The standard states that in the event of a “separation event” the frequency must be contained within 49 to 51 Hz or a wider band notified to AEMO by a relevant JSSC. In the case of South Australia the JSSC notified AEMO that the frequency band for separation of the South Australian power system is 47 to 52 Hz and that under frequency relays will operate at frequency levels in the low end of this range.

When there is a potential separation event caused by the loss of an interconnector “local frequency control ancillary services” are usually required.

If the region was exporting at the time the interconnector fails, then as a consequence of the immediate over supply situation local contingency “lower” services are required in the islanded region to lower the frequency (typically generators offer to quickly reduce output to lower frequency). In other words, the loss of the Heywood interconnector when power is flowing from South Australia, results in an oversupply of generation, increasing the frequency in South Australia. Contingency lower services are sourced from registered suppliers in South Australia (typically generators) in proportion to the flow across the interconnector from South Australia to Victoria to quickly reduce that over frequency.

A similar situation exists for contingency “raise” services for all other regions except South Australia where, in accordance with the advice from the JSSC, the raise requirement is covered by under frequency load shedding. In other words, the loss of the Heywood interconnector when power is flowing into South Australia, results in an undersupply of generation decreasing the frequency in South Australia. Under frequency load shedding reduces demand in blocks to arrest the falling frequency until supply matches demand and the frequency is restored.

In either event, in the past, in the period immediately following the separation event AEMO would invoke local regulation services and establish a local regulation reference source to manage frequency until the region can be reconnected to the rest of the NEM. It is this aspect that has been recently changed by AEMO. AEMO will now impose a requirement for local lower and raise regulation services in South Australia prior to the failure of the interconnector so that frequency after an island is formed, and after the contingency services have operated, can be smoothly maintained.

Appendix C: Significant Rebids

The rebidding tables highlight the relevant rebids submitted by generators that impacted on market outcomes during the time of high prices. It details the time the rebid was submitted and used by the dispatch process, the capacity involved, the change in the price of the capacity was being offered and the rebid reason.

Table C 1: Significant rebids for 28 August – lower regulation

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MW)	Price to (\$/MW)	Rebid reason
3.06 pm	10.35 am	AGL	Torrens Island	2	300	≥10 000	1430~A~050 CHG IN AEMO PD~50 PD RREG PRICE DECREASE SA \$1342 VS \$208.40 [1830]

Table C 2: Significant rebids for 28 August – raise regulation

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MW)	Price to (\$/MW)	Rebid reason
3.06 pm	10.35 am	AGL	Torrens Island	2	300	≥10 000	1430~A~050 CHG IN AEMO PD~50 PD RREG PRICE DECREASE SA \$1342 VS \$208.40 [1830]

Appendix D: Closing bids

Figures D1a to D6b highlight for each dispatch interval the lower and raise regulation services closing bids for Origin, AGL and Engie (the participants in South Australia with ancillary service capability). It also shows the dispatch level of the respective services at each station and the dispatch price.

FCAS services are co-optimised with energy offers. For example a generator that is operating at its maximum capacity cannot provide raise services so their effective available capacity for raise services would be zero. Figures denoted with an “a” refer to the quantities offered while those with a “b” refer to the *effective* quantities available to the market after accounting for the interaction between energy and FCAS (“effective available capacity”).

Lower Regulation

Figure D1a: Torrens Island (AGL) lower regulation service closing bid prices, dispatch and dispatch price - maximum offers

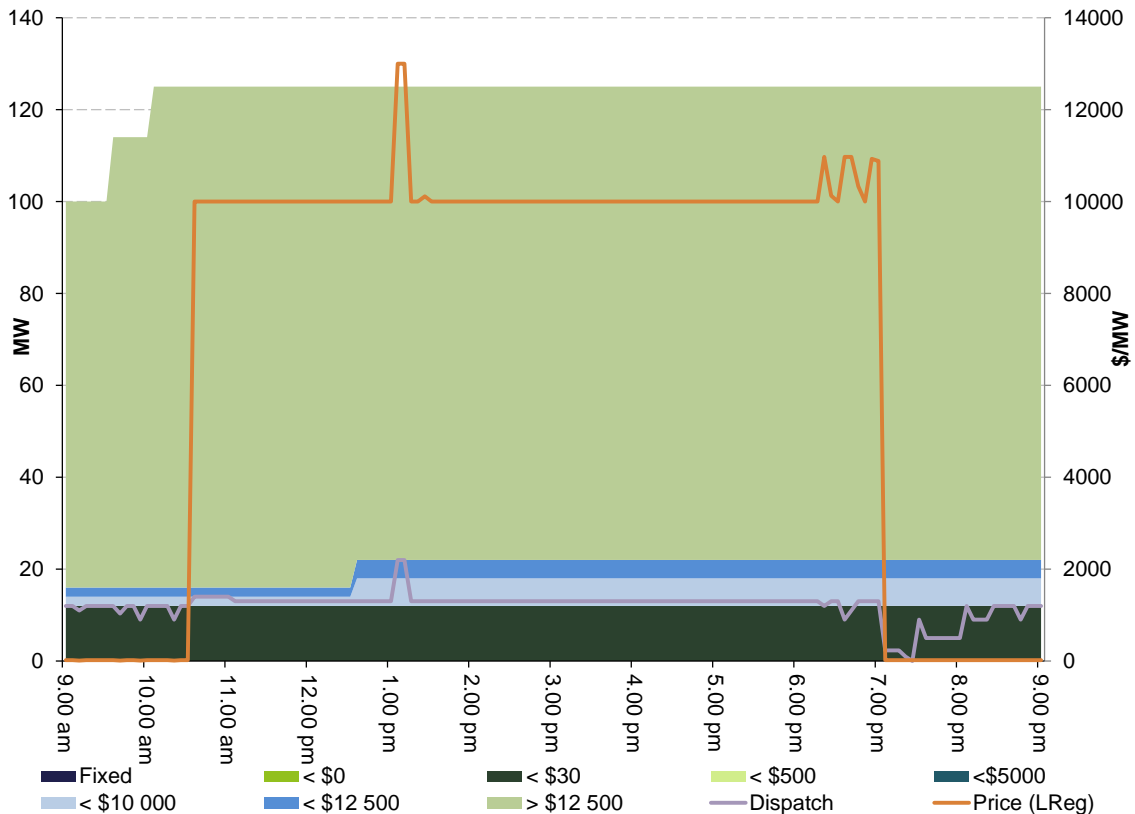


Figure D1b: Torrens Island (AGL) lower regulation service closing bid prices, dispatch and dispatch price – effective offers

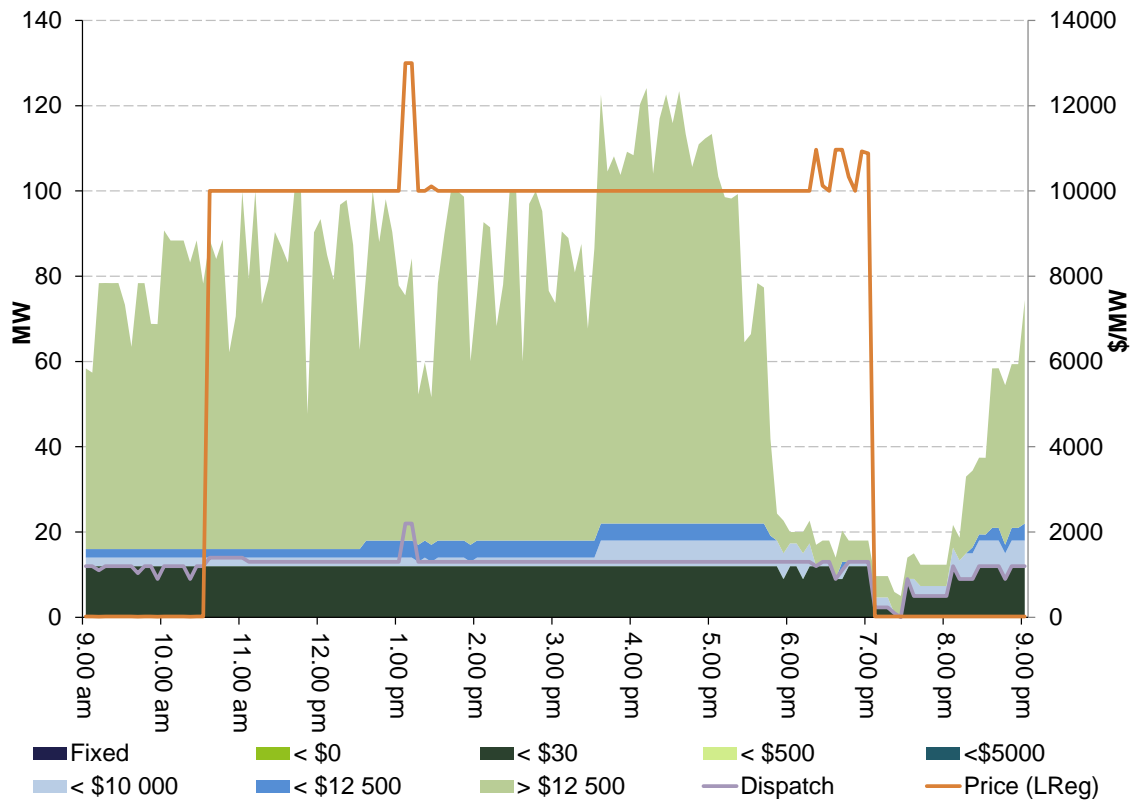


Figure D2a: Pelican Point (Engie) lower regulation service closing bid prices, dispatch and dispatch price – maximum offers

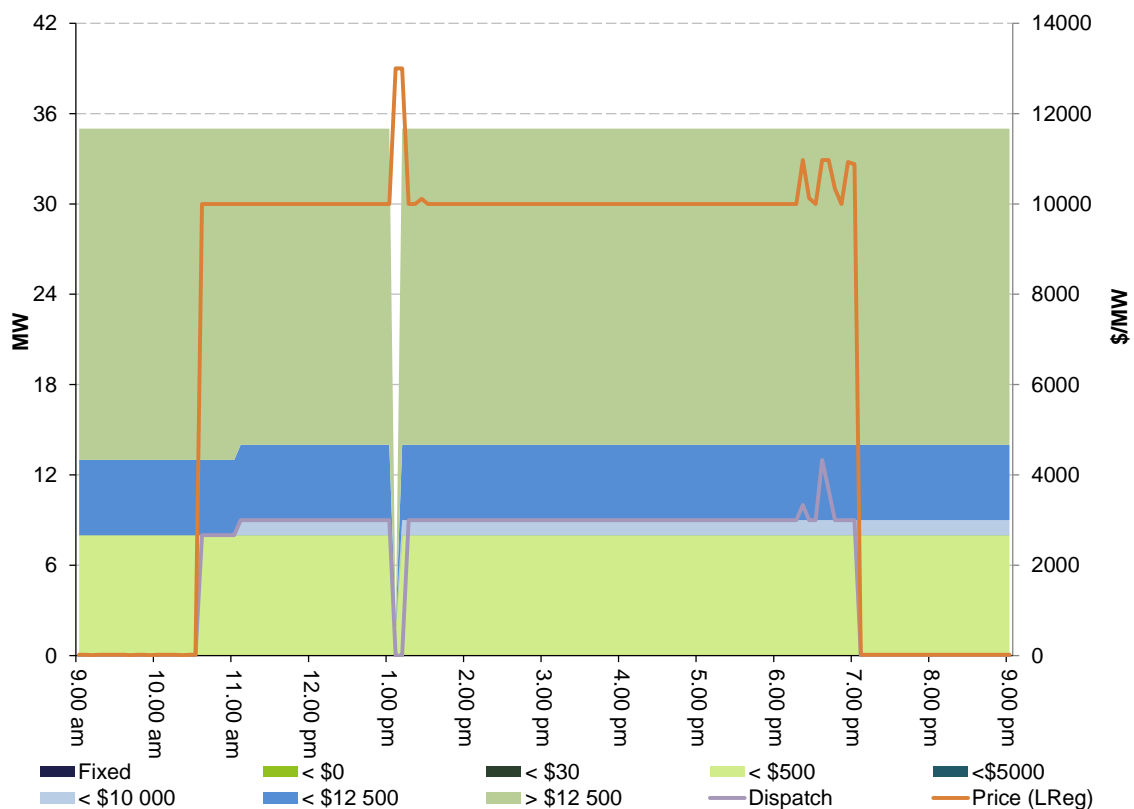


Figure D2b: Pelican Point (Engie) lower regulation service closing bid prices, dispatch and dispatch price – effective offers

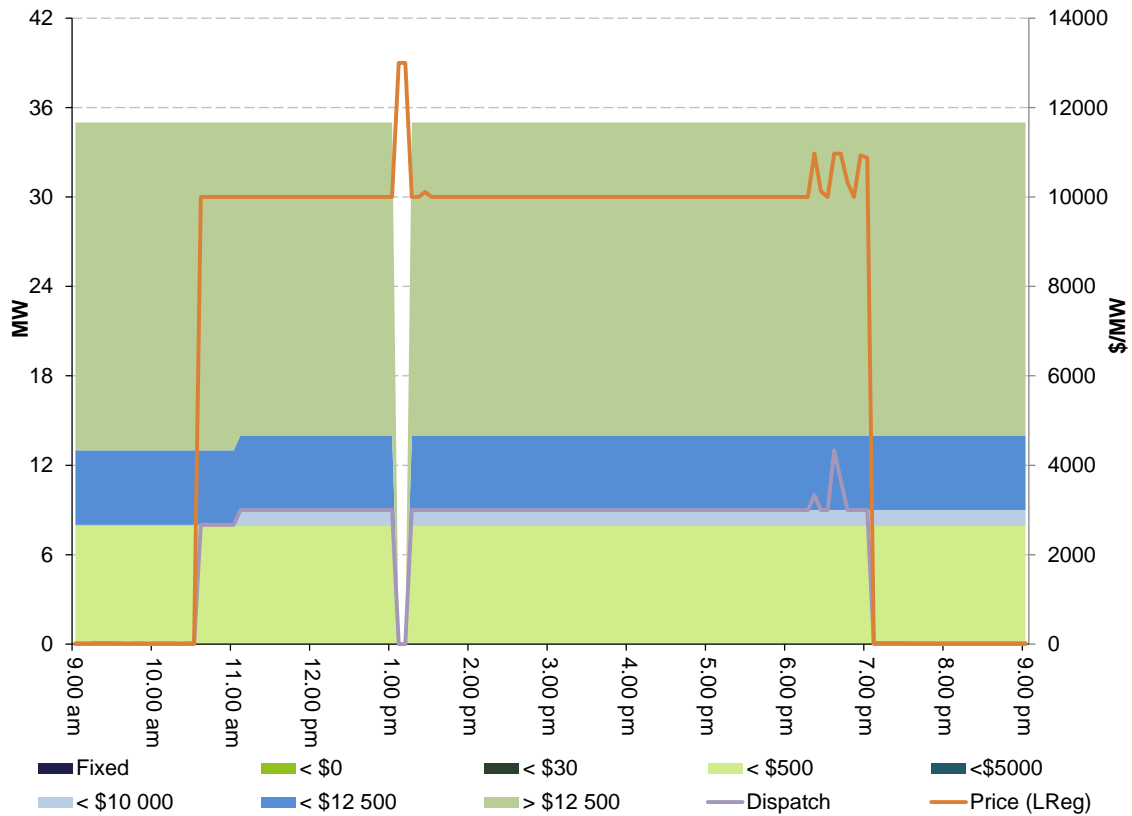


Figure D3a: Quarantine (Origin) lower regulation service closing bid prices, dispatch and dispatch price – maximum offers

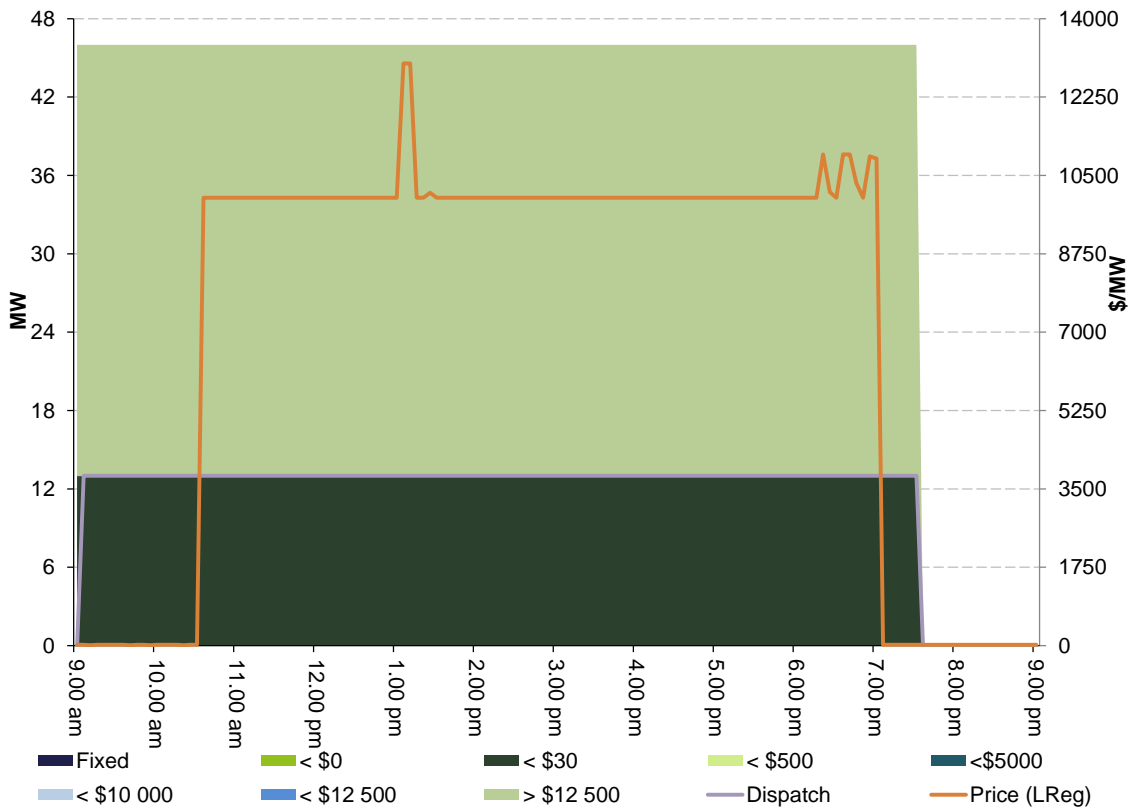
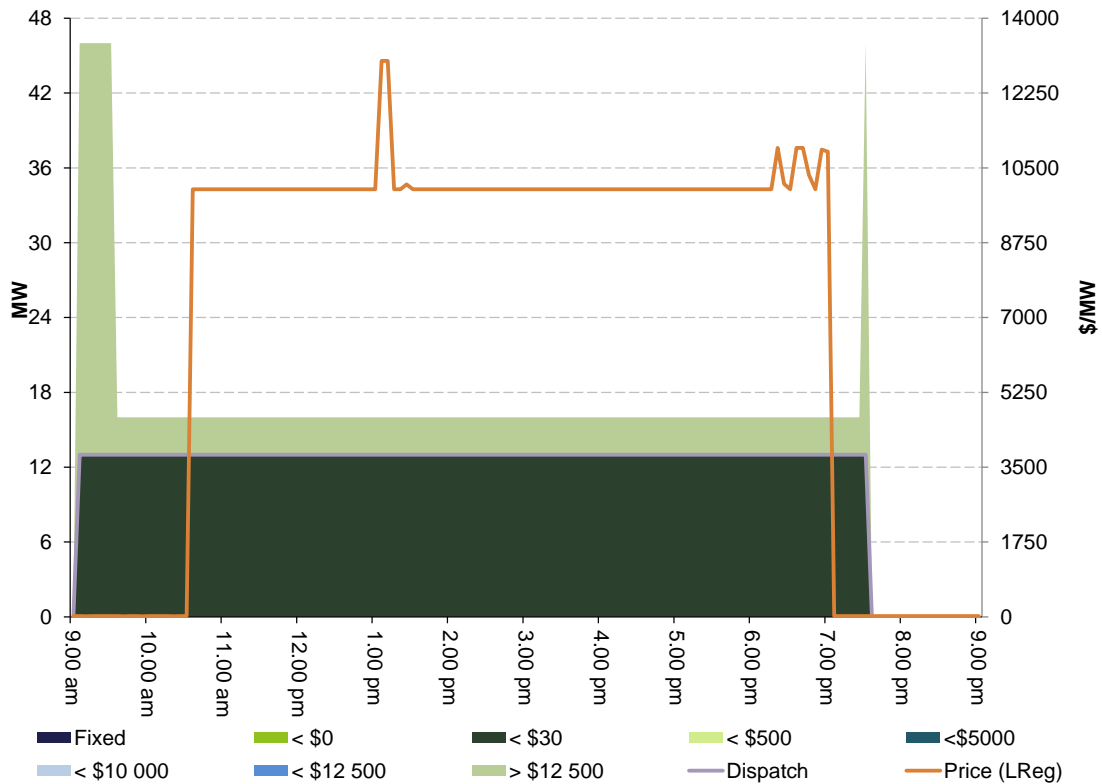


Figure D3b: Quarantine (Origin) lower regulation service closing bid prices, dispatch and dispatch price – effective offers



Raise Regulation

Figure D4a: Torrens Island (AGL) raise regulation service closing bid prices, dispatch and dispatch price - maximum offers

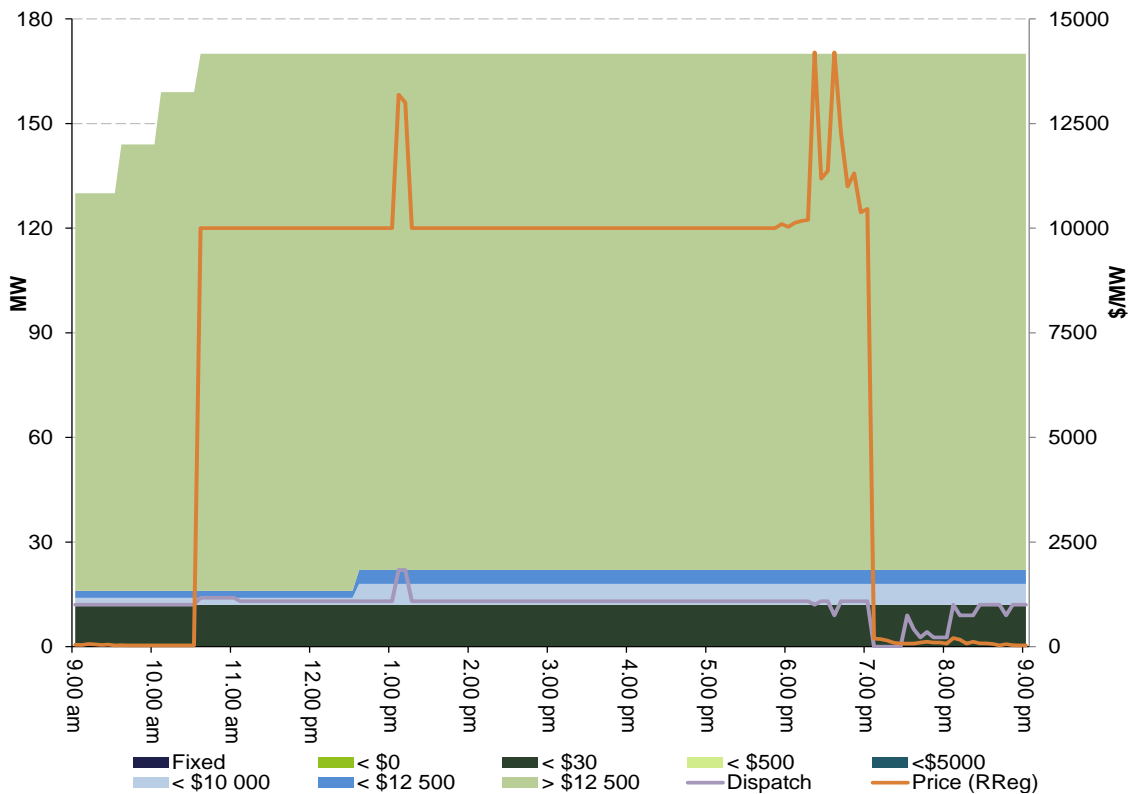


Figure D4b: Torrens Island (AGL) raise regulation service closing bid prices, dispatch and dispatch price - effective offers

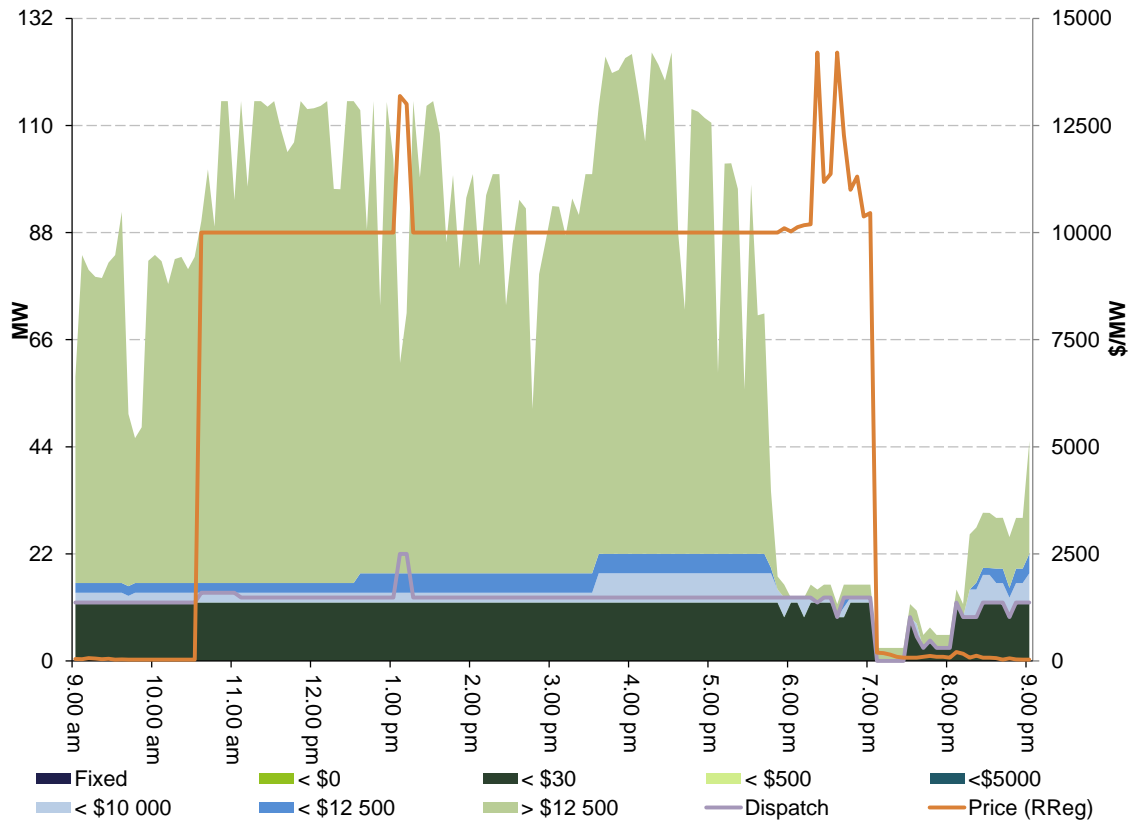


Figure D5a: Pelican Point (Engie) raise regulation service closing bid prices, dispatch and dispatch price – maximum offers

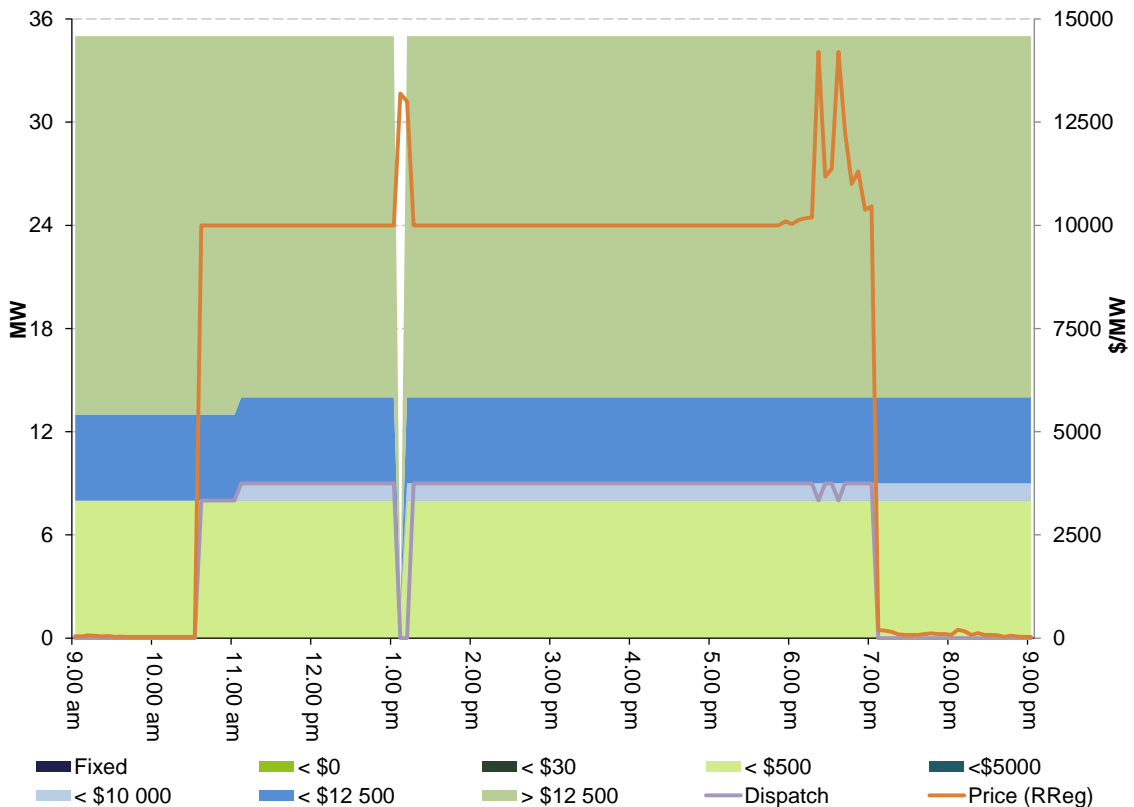


Figure D5b: Pelican Point (Engie) raise regulation service closing bid prices, dispatch and dispatch price – effective offers

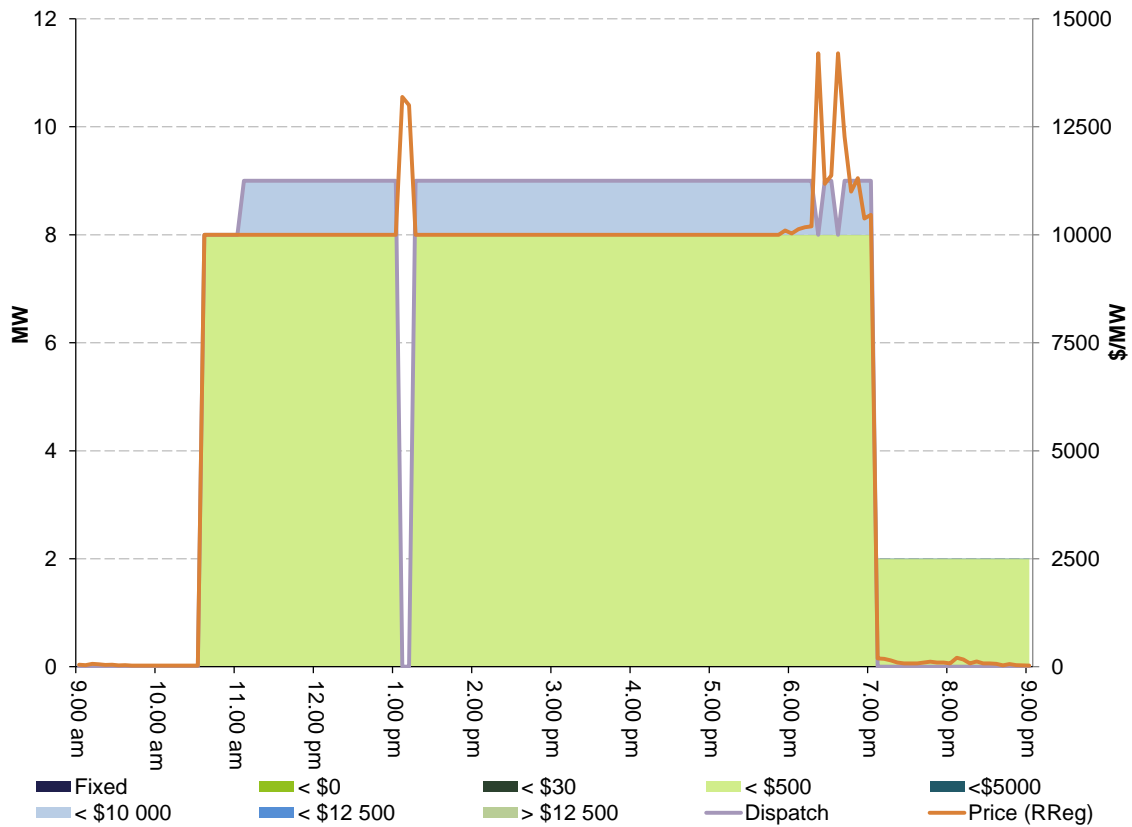


Figure D6a: Quarantine (Origin) raise regulation service closing bid prices, dispatch and dispatch price – maximum offers

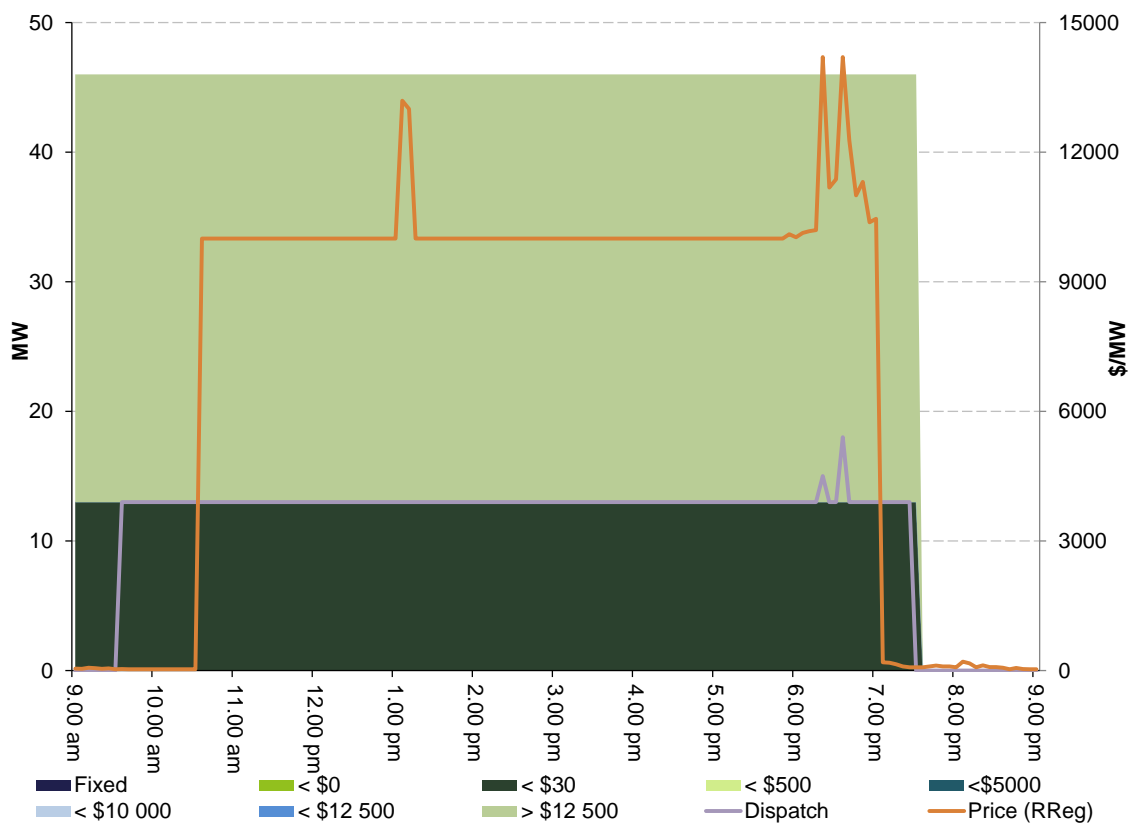
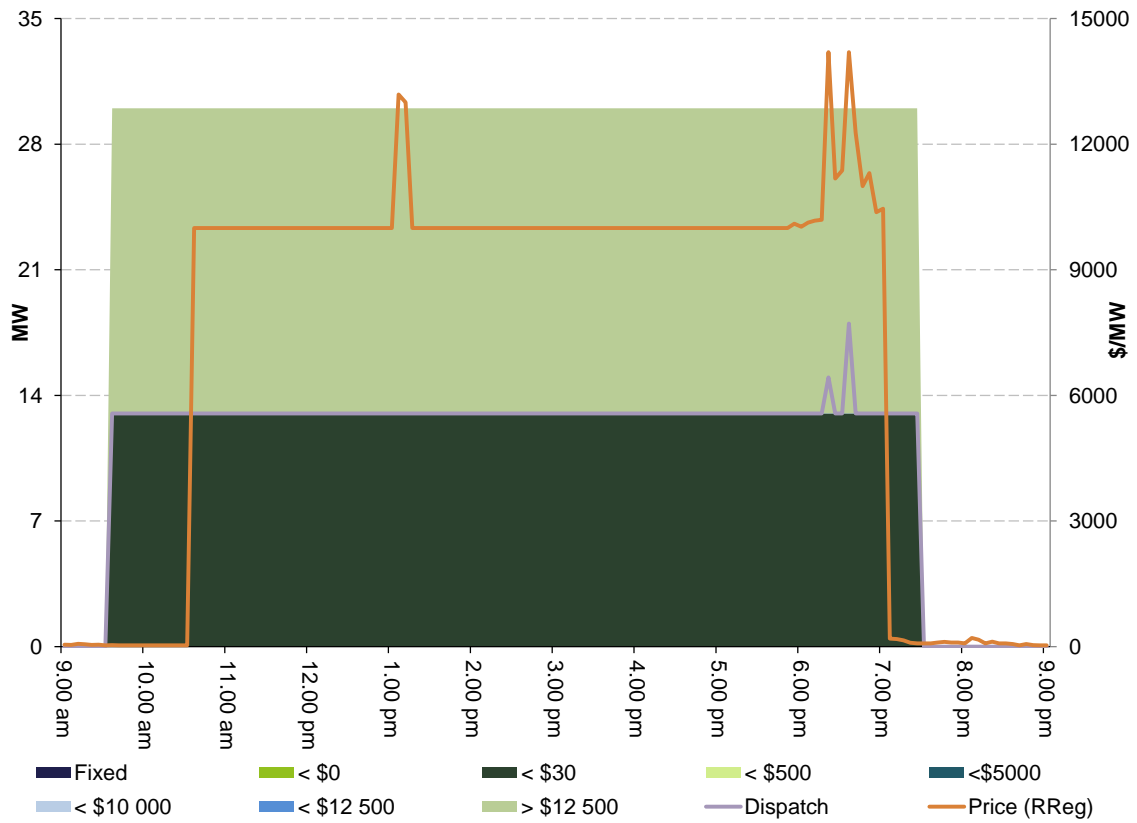


Figure D6b: Quarantine (Origin) raise regulation service closing bid prices, dispatch and dispatch price – effective offers



Appendix E: Relevant Market Notices

AEMO issued the following market notices relating to events on the day.

Market Notice	Type	Date of issue	Last Changed
58976	GENERAL NOTICE	08/08/2017 9:52:28	08/08/2017 9:52:28

Reason

AEMO ELECTRICITY MARKET NOTICE.

This market notice is FOR INFORMATION ONLY.

The Moorabool to Mortlake PS 500kV line in Victoria Region is planned out of service from 28/08/2017 0630 hrs to 28/08/2017 1330 hrs.

During this outage, a credible contingency can separate South Australia region from the rest of the NEM.

In addition, consistent with AEMO existing procedures, adequate contingency FCAS lower requirements will also be sourced from South Australia at times when power transfer is from South Australia to Victoria.

The following constraint sets have been invoked for this outage:

F-V-MLMO (includes F-S_LREG_0035 and F-S_RREG_0035)

S-X_BC_CP

I-VS_050

V-MLMO

Refer AEMO Network Outage Schedule (NOS) for further details.

AEMO will continue monitoring this proposed outage and will update the Market accordingly.

Diyoni Hoole
AEMO Operations

Market Notice	Type	Date of issue	Last Changed
59091	GENERAL NOTICE	25/08/2017 08:13:50	25/08/2017 08:13:50

Reason

AEMO ELECTRICITY MARKET NOTICE.

This market notice is FOR INFORMATION ONLY.

This is an update to market notice 58976.

The Moorabool to Mortlake PS 500kV line in Victoria Region is planned out of service from 28/08/2017 0630 hrs to 28/08/2017 1330 hrs has been rescheduled to 28/08/2017 1030 hrs to 1730 hrs.

During this outage, a credible contingency can separate South Australia region from the rest of the NEM.

In addition, consistent with AEMO existing procedures, adequate contingency FCAS lower requirements will also be sourced from South Australia at times when power transfer is from South Australia to Victoria.

The following constraint sets have been invoked for this outage:

F-V-MLMO (includes F-S_LREG_0035 and F-S_RREG_0035)

S-X_BC_CP

I-VS_050

V-MLMO

Refer AEMO Network Outage Schedule (NOS) for further details.

AEMO will continue monitoring this proposed outage and will update the Market accordingly.

Bhishma Chhetri
AEMO Operations

Appendix F: Price setter

The following tables identify for each five-minute dispatch interval where regulation dispatch prices were above \$5000/MW, the price and the generating units involved in setting the price for each of the lower and raise regulation services in South Australia. This information is published by AEMO.⁴ Also shown are the offer prices involved in determining the dispatch price, together with the quantity of that service and the contribution to the total price. AEMO reports an increase as a negative marginal change in FCAS price setter. Generator offers which contributed zero to the price have been removed for clarity.

Lower regulation 28 August

DI	Dispatch Price (\$/MW)	Participant	Unit	Service	Offer price (\$/MW)	Marginal change	Contribution
10:35	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
10:40	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
10:45	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
10:50	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
10:55	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
11:00	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
11:05	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
11:10	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
11:15	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
11:20	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
11:25	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
11:30	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
11:35	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
11:40	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
11:45	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
11:50	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
11:55	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
12:00	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
12:05	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
12:10	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
12:15	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
12:20	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
12:25	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
12:30	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
12:35	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99

⁴ Details on how the price is determined can be found at www.aemo.com.au

DI	Dispatch Price (\$/MW)	Participant	Unit	Service	Offer price (\$/MW)	Marginal change	Contribution
12:40	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
12:45	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
12:50	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
12:55	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
13:00	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
13:05	\$12 999.99	AGL (SA)	TORRA4	Lower reg	\$12 999.99	-1.00	-\$12 999.99
13:10	\$12 999.99	AGL (SA)	TORRA4	Lower reg	\$12 999.99	-1.00	-\$12 999.99
13:15	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
		AGL (SA)	TORRA1	Energy	\$389.99	0.50	\$195.00
		AGL (SA)	TORRA4	Energy	\$389.99	0.50	\$195.00
		AGL (SA)	TORRB1	Energy	\$389.99	-1.00	-\$389.99
13:20	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
13:25	\$10 111.17	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
		AGL (SA)	TORRB1	Energy	\$389.99	-1.00	-\$389.99
		EnergyAustralia	AGLHAL	Energy	\$278.81	1.00	\$278.81
13:30	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
13:35	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
13:40	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
13:45	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
13:50	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
13:55	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
		AGL (SA)	TORRA1	Energy	\$389.99	0.26	\$101.40
		AGL (SA)	TORRA4	Energy	\$389.99	0.26	\$101.40
		AGL (SA)	TORRB1	Energy	\$389.99	-1.00	-\$389.99
		AGL (SA)	TORRB4	Energy	\$389.99	0.48	\$187.20
14:00	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
14:05	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
14:10	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
14:15	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
14:20	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
14:25	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
14:30	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
14:35	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
14:40	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
14:45	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
14:50	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
14:55	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
15:00	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99

DI	Dispatch Price (\$/MW)	Participant	Unit	Service	Offer price (\$/MW)	Marginal change	Contribution
15:05	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
15:10	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
15:15	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
15:20	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
15:25	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
15:30	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
15:35	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
15:40	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
15:45	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
15:50	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
15:55	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
16:00	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
16:05	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
16:10	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
16:15	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
16:20	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
16:25	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
16:30	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
16:35	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
16:40	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
16:45	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
16:50	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
16:55	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
17:00	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
17:05	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
17:10	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
17:15	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
17:20	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
17:25	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
17:30	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
17:35	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
17:40	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
17:45	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
17:50	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
17:55	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
18:00	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
18:05	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
18:10	\$9999.99	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99

DI	Dispatch Price (\$/MW)	Participant	Unit	Service	Offer price (\$/MW)	Marginal change	Contribution
18:15	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
18:20	\$10 969.69	Engie	PPCCGT	Lower reg	\$10 969.69	-1.00	-\$10 969.69
18:25	\$10 125.98	Engie	PPCCGT	Raise reg	\$10 969.69	1.00	\$10 969.69
		AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
		AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
		Engie	PPCCGT	Energy	\$95.69	-1.00	-\$95.69
		AGL (SA)	TORRB2	Energy	-\$1000.00	1.00	-\$1000.00
18:30	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
18:35	\$10 969.69	Engie	PPCCGT	Lower reg	\$10 969.69	-1.00	-\$10 969.69
18:40	\$10 969.69	Engie	PPCCGT	Lower reg	\$10 969.69	-1.00	-\$10 969.69
18:45	\$10 331.50	AGL (SA)	TORRA4	Raise reg	\$10 999.99	1.00	\$10 999.99
		AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
		AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
		Snowy Hydro	MURRAY	Energy	\$290.00	-1.14	-\$330.60
		AGL (SA)	TORRB2	Energy	-\$1000.00	1.00	-\$1000.00
18:50	\$9999.99	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
18:55	\$10 928.50	AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
		Snowy Hydro	MURRAY	Energy	\$290.00	3.44	\$997.60
		Hydro Tasmania	GORDON	Energy	\$132.63	-4.89	-\$648.56
		AGL Energy	BW03	Raise 5 min	\$70.00	-3.89	-\$272.30
		Ecogen Energy	NPS	Raise 60 sec	\$24.50	-7.89	-\$193.31
		Hydro Tasmania	GORDON	Raise 6 sec	\$21.00	2.14	\$44.94
		Hydro Tasmania	GORDON	Raise 5 min	\$15.00	4.89	\$73.35
		Hydro Tasmania	GORDON	Raise 60 sec	\$10.00	7.89	\$78.90
		AGL (SA)	TORRB2	Raise 6 sec	\$5.00	-2.14	-\$10.70
		AGL (SA)	TORRB4	Lower 5 min	\$0.80	1.00	\$0.80
		Engie	LOYB2	Lower 60 sec	\$0.02	-1.03	-\$0.02
		AGL (SA)	TORRB2	Energy	-\$1000.00	1.00	-\$1000.00
19:00	\$10 879.97	AGL (SA)	TORRB1	Lower reg	\$9999.99	-1.00	-\$9999.99
		Snowy Hydro	MURRAY	Energy	\$290.00	1.31	\$379.90
		Hydro Tasmania	GORDON	Energy	\$132.63	-2.70	-\$358.10
		CS Energy	GSTONE5	Raise reg	\$47.99	-1.70	-\$81.58
		Hydro Tasmania	GORDON	Raise reg	\$47.00	1.70	\$79.90
		Ecogen Energy	NPS	Raise 60 sec	\$24.50	0.02	\$0.49
		Hydro Tasmania	GORDON	Raise 6 sec	\$21.00	0.44	\$9.24
		CS Energy	GSTONE5	Raise 6 sec	\$20.69	1.70	\$35.17
		Hydro Tasmania	GORDON	Raise 5 min	\$15.00	1.00	\$15.00
		CS Energy	GSTONE5	Raise 60 sec	\$14.79	1.70	\$25.14

DI	Dispatch Price (\$/MW)	Participant	Unit	Service	Offer price (\$/MW)	Marginal change	Contribution
		Hydro Tasmania	GORDON	Raise 60 sec	\$10.00	1.61	\$16.10
		Hydro Tasmania	TREBALLN	Lower 5 min	\$0.17	1.00	\$0.17
		AGL (SA)	TORRB1	Energy	-\$1000.00	1.00	-\$1000.00

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DI	Dispatch Price (\$/MW)	Participant	Unit	Service	Offer price (\$/MW)	Marginal change	Contribution
10:35	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
10:40	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
10:45	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
10:50	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
10:55	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
11:00	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
11:05	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
11:10	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
11:15	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
11:20	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
11:25	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
11:30	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
11:35	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
11:40	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
11:45	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
11:50	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
11:55	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
12:00	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
12:05	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
12:10	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
12:15	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
12:20	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
12:25	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
12:30	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
12:35	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
12:40	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
12:45	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
12:50	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
12:55	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
13:00	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99

DI	Dispatch Price (\$/MW)	Participant	Unit	Service	Offer price (\$/MW)	Marginal change	Contribution
13:05	\$13 188.81	AGL (SA)	TORRA1	Raise reg	\$12 999.99	-0.50	-\$6500.00
		AGL (SA)	TORRA4	Raise reg	\$12 999.99	-0.50	-\$6500.00
		EnergyAustralia	AGLHAL	Energy	\$578.81	-1.00	-\$578.81
		AGL (SA)	TORRA1	Energy	\$389.99	0.50	\$195.00
		AGL (SA)	TORRA4	Energy	\$389.99	0.50	\$195.00
13:10	\$12 999.99	AGL (SA)	TORRA1	Raise reg	\$12 999.99	-1.00	-\$12 999.99
		AGL (SA)	TORRA1	Lower 6 sec	\$0.03	0.33	\$0.01
		EnergyAustralia	YWPS1	Lower 6 sec	\$0.03	-0.33	-\$0.01
13:15	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
13:20	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
13:25	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
13:30	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
13:35	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
13:40	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
13:45	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
13:50	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
13:55	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
14:00	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
14:05	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
14:10	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
14:15	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
14:20	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
14:25	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
14:30	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
14:35	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
14:40	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
14:45	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
14:50	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
14:55	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
15:00	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
15:05	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
15:10	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
15:15	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
15:20	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
15:25	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
15:30	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
15:35	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
15:40	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99

DI	Dispatch Price (\$/MW)	Participant	Unit	Service	Offer price (\$/MW)	Marginal change	Contribution
15:45	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
15:50	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
15:55	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
16:00	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
16:05	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
16:10	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
16:15	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
16:20	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
16:25	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
16:30	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
16:35	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
16:40	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
16:45	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
16:50	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
16:55	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
17:00	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
17:05	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
17:10	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
17:15	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
17:20	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
17:25	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
17:30	\$9999.99	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
17:35	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
17:40	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
17:45	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
17:50	\$9999.99	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
17:55	\$10 099.95	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
		Snowy Hydro	PTSTAN1	Energy	\$349.95	-1.00	-\$349.95
		AGL (SA)	TORRB2	Energy	\$249.99	1.00	\$249.99
18:00	\$10 027.91	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
		AGL (SA)	TORRB2	Energy	\$389.99	1.00	\$389.99
		Hydro Tasmania	GORDON	Energy	\$132.63	-2.63	-\$348.82
		CS Energy	GSTONE2	Energy	\$103.73	0.29	\$30.08
		CS Energy	GSTONE4	Energy	\$103.73	0.29	\$30.08
		CS Energy	GSTONE5	Energy	\$103.73	0.29	\$30.08
		CS Energy	GSTONE6	Energy	\$103.73	0.29	\$30.08
		AGL Energy	BW01	Raise 5 min	\$70.00	-2.63	-\$184.10
		Ecogen Energy	NPS	Raise 60 sec	\$24.50	-3.09	-\$75.71

DI	Dispatch Price (\$/MW)	Participant	Unit	Service	Offer price (\$/MW)	Marginal change	Contribution
		Hydro Tasmania	GORDON	Raise 6 sec	\$21.00	1.15	\$24.15
		CS Energy	GSTONE2	Raise 6 sec	\$20.69	-0.29	-\$6.00
		CS Energy	GSTONE4	Raise 6 sec	\$20.69	-0.29	-\$6.00
		CS Energy	GSTONE5	Raise 6 sec	\$20.69	-0.29	-\$6.00
		CS Energy	GSTONE6	Raise 6 sec	\$20.69	-0.29	-\$6.00
		Hydro Tasmania	GORDON	Raise 5 min	\$15.00	2.63	\$39.45
		Hydro Tasmania	GORDON	Raise 60 sec	\$10.00	4.24	\$42.40
		CS Energy	GSTONE2	Raise 60 sec	\$9.80	-0.29	-\$2.84
		CS Energy	GSTONE4	Raise 60 sec	\$9.80	-0.29	-\$2.84
		CS Energy	GSTONE5	Raise 60 sec	\$9.80	-0.29	-\$2.84
		CS Energy	GSTONE6	Raise 60 sec	\$9.80	-0.29	-\$2.84
18:05	\$10 128.75	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
		Snowy Hydro	MURRAY	Energy	\$290.00	-1.31	-\$379.90
		AGL (SA)	TORRB2	Energy	\$249.99	1.00	\$249.99
18:10	\$10 172.23	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
		Snowy Hydro	MURRAY	Energy	\$290.00	-1.46	-\$423.40
		AGL (SA)	TORRB2	Energy	\$249.99	1.00	\$249.99
18:15	\$10 194.85	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
		Snowy Hydro	UPPTUMUT	Energy	\$299.60	-1.48	-\$443.41
		AGL (SA)	TORRB2	Energy	\$249.99	1.00	\$249.99
18:20	\$14 200.00	Origin Energy	QPS5	Raise reg	\$14 200.00	-1.00	-\$14 200.00
18:25	\$11 182.28	Engie	PPCCGT	Raise reg	\$10 969.69	-1.00	-\$10 969.69
		Snowy Hydro	UPPTUMUT	Energy	\$299.60	-1.03	-\$308.59
		Engie	PPCCGT	Energy	\$95.69	1.00	\$95.69
		Engie	LOYB2	Lower 60 sec	\$0.02	-1.03	-\$0.02
18:30	\$11 370.52	AGL (SA)	TORRB1	Raise reg	\$9999.99	-1.00	-\$9999.99
		Snowy Hydro	MURRAY	Energy	\$290.00	-1.28	-\$371.20
		AGL (SA)	TORRB1	Energy	-\$1000.00	1.00	-\$1000.00
18:35	\$14 200.00	Origin Energy	QPS5	Raise reg	\$14 200.00	-1.00	-\$14 200.00
18:40	\$12 269.72	Engie	PPCCGT	Raise reg	\$10 969.69	-1.00	-\$10 969.69
		Snowy Hydro	MURRAY	Energy	\$290.00	-1.03	-\$298.70
		Engie	LOYB1	Lower 60 sec	\$0.02	-1.02	-\$0.02
		Engie	PPCCGT	Energy	-\$1000.00	1.00	-\$1000.00
18:45	\$10 999.99	AGL (SA)	TORRA4	Raise reg	\$10 999.99	-1.00	-\$10 999.99
18:50	\$11 309.65	AGL (SA)	TORRB1	Lower reg	\$9999.99	1.00	\$9999.99
		AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
		AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
		Snowy Hydro	MURRAY	Energy	\$290.00	-1.07	-\$310.30

DI	Dispatch Price (\$/MW)	Participant	Unit	Service	Offer price (\$/MW)	Marginal change	Contribution
		AGL (SA)	TORRB2	Energy	-\$1000.00	1.00	-\$1000.00
18:55	\$10 374.88	AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
		Snowy Hydro	MURRAY	Energy	\$290.00	-4.49	-\$1302.10
		Hydro Tasmania	GORDON	Energy	\$132.63	4.89	\$648.56
		AGL Energy	BW03	Raise 5 min	\$70.00	3.89	\$272.30
		Ecogen Energy	NPS	Raise 60 sec	\$24.50	7.89	\$193.31
		Hydro Tasmania	GORDON	Raise 6 sec	\$21.00	-2.14	-\$44.94
		Hydro Tasmania	GORDON	Raise 5 min	\$15.00	-4.89	-\$73.35
		Hydro Tasmania	GORDON	Raise 60 sec	\$10.00	-7.89	-\$78.90
		AGL (SA)	TORRB2	Raise 6 sec	\$5.00	2.14	\$10.70
		AGL (SA)	TORRB4	Lower 5 min	\$0.80	-1.00	-\$0.80
19:00	\$10 459.05	AGL (SA)	TORRB1	Lower reg	\$9999.99	1.00	\$9999.99
		AGL (SA)	TORRB2	Lower reg	\$9999.99	-1.00	-\$9999.99
		AGL (SA)	TORRB2	Raise reg	\$9999.99	-1.00	-\$9999.99
		Snowy Hydro	MURRAY	Energy	\$290.00	-2.48	-\$719.20
		Hydro Tasmania	GORDON	Energy	\$132.63	2.70	\$358.10
		CS Energy	GSTONE5	Raise reg	\$47.99	1.70	\$81.58
		Hydro Tasmania	GORDON	Raise reg	\$47.00	-1.70	-\$79.90
		Ecogen Energy	NPS	Raise 60 sec	\$24.50	-0.02	-\$0.49
		Hydro Tasmania	GORDON	Raise 6 sec	\$21.00	-0.44	-\$9.24
		CS Energy	GSTONE5	Raise 6 sec	\$20.69	-1.70	-\$35.17
		Hydro Tasmania	GORDON	Raise 5 min	\$15.00	-1.00	-\$15.00
		CS Energy	GSTONE5	Raise 60 sec	\$14.79	-1.70	-\$25.14
		Hydro Tasmania	GORDON	Raise 60 sec	\$10.00	-1.61	-\$16.10
		Hydro Tasmania	TREVALLN	Lower 5 min	\$0.17	-1.00	-\$0.17
		AGL (SA)	TORRB1	Energy	-\$1000.00	-1.00	\$1000.00
		AGL (SA)	TORRB2	Energy	-\$1000.00	1.00	-\$1000.00