Report into market ancillary service prices above $5000/MW

South Australia, 25 November 2016

1 September 2017

AUSTRALIAN ENERGY REGULATOR

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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.

A planned network outage in Victoria, affecting the Heywood interconnector commenced at 7 am on 22 November 2016 and finished at 10 am on 26 November 2016. 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.

Participants offered more than 35 MW of low priced regulation services for the 22 to 24 November trading days and as a result prices for regulation services remained relatively low throughout that time.

In contrast, participants offered 1 MW less than the 35 MW requirement of low priced raise and lower regulation services for 25 November, and as a result high-priced capacity (above $5000/MW) was needed. The price for local regulation services in South Australia exceeded $7900/MW for 91 consecutive dispatch intervals from 4.05 am to 11.35 am. Price forecasts the day before showed prices for 25 November were set to exceed $5000/MW.

The sustained high prices led to the Cumulative Price Threshold (CPT) being breached at 11.35 am. As required under the Rules, AEMO applied the $300/MW administered price cap from 11.40 am.

The wholesale (or spot) price for electricity in South Australia on 25 November remained below $60/MWh during this time.

Rebidding of capacity on 25 November did not contribute to the high prices.

3 Analysis

The following sections explain the reasons for the high regulation services prices. To summarise, in response to a planned network outage over several days in Victoria, AEMO imposed the requirement that 35 MW of regulation services be sourced locally in South Australia. Participants offered less than 35 MW of low priced capacity on the fourth day of the outage, and so high priced capacity was needed to meet the requirement, which in turn led to high regulation FCAS prices.

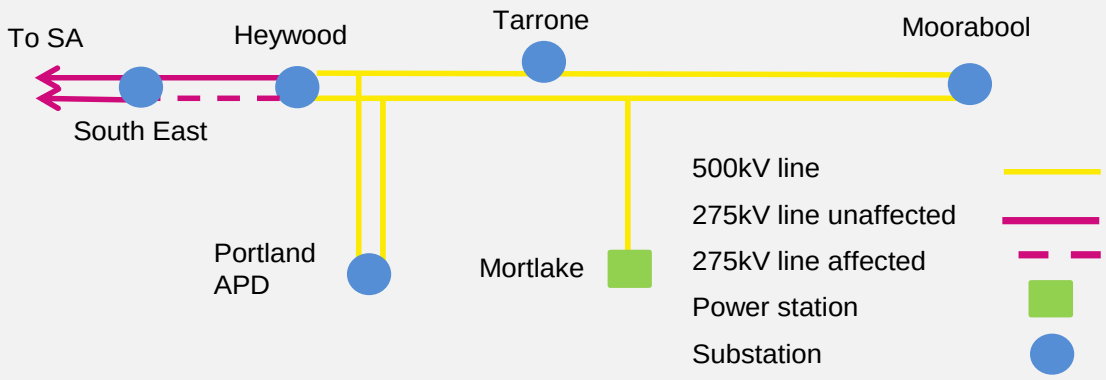
3.1 Planned network outage

Market notice 55466 (published on 24 October and replicated at Appendix E), announced to the market that there would be an outage on the Heywood to South East No.1 275 kV line from 7 am on 22 November 2016 to 5 pm on 26 November 2016, 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.

As announced in Market Notice 55845, AEMO removed the 35 MW requirement as soon as the line was reinstated at 10 am on 26 November, some seven hours earlier than expected. The market notices relating to the outage are in Appendix E.

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 frequency controlled ancillary services (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

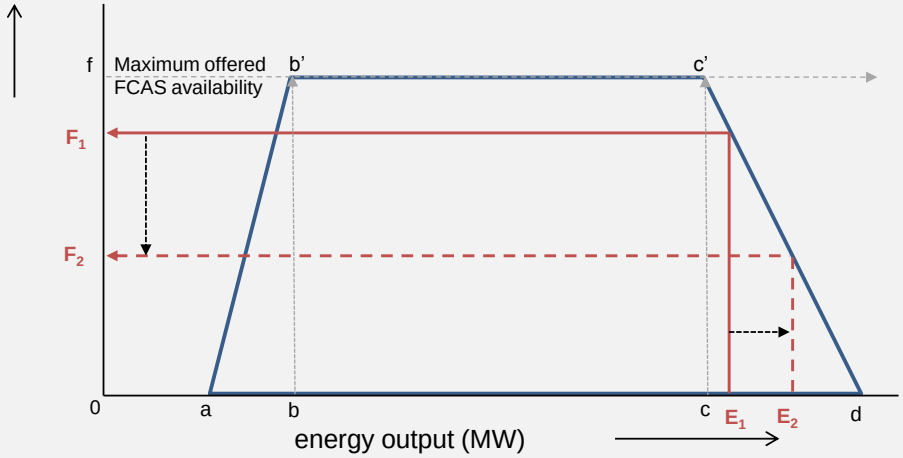
This section discusses participants' offers and resultant prices. Although the planned network outage ran over five trading days, high prices only occurred on the fourth trading day as sufficient low priced capacity was offered for the proceeding days, driving low priced outcomes (around $300MW for the majority of the time).

Box 2: Trade-off 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 $14 000 for a trading day. A trading day starts at 4 am each day. A participant also offers the limits by which they can be dispatched in FCAS (a, b, c, d in the diagram below). There can be a trade-off between a participant's provision of FCAS and energy, impacting the effective availability of FCAS. For example in the diagram below, if a generator's energy output is at E_1 then its FCAS effective 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.



3.2.1 Registered maximum regulation 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 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 in MW 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

Power Station	Registered Capacity (MW)	
	Lower regulation	Raise regulation
Torrens Island (AGL)	200	260
Total	**386**	**446**

On the day of the high price, Quarantine power station, half of Pelican Point power station and five units at Torrens Island power station were unavailable. So, although the registered capacity is as shown in Table 1, only approximately 135 MW of lower regulation and 180 MW of raise regulation was available.

Participant offers are reflected in Appendix D.

3.2.2 Prices for maximum and effective available capacity

Table 2 shows, by station, the maximum and average effective amount of capacity offered above and below $5000/MW for regulation services during the time of high prices on 25 November. The relationship between maximum and effective capacity is explained in Box 2.

Table 2: Regulation FCAS capacity below and above $5000/MW by station on 25 November 2016

	Raise regulation				Lower regulation			
	Max Availability		Effective Availability		Max Availability		Effective Availability	
Power Station	Below $5000	Above $5000	Below $5000	Above $5000	Below $5000	Above $5000	Below $5000	Above $5000
Osborne	6	19	6	7	6	19	6	7
Pelican Point	4	31	4	31	4	31	4	13
Torrens Island	24	96	24	60	24	51	24	2
Total	**34**	**146**	**34**	**98**	**34**	**101**	**34**	**22**

Table 2 shows that there was only 34 MW of capacity offered in below $5000/MW for both maximum and effective availability. These offers were set up in advance the day before. As a result, prices for regulation services were forecast to exceed $5000/MW on 25 November. This did not change in the lead up to the start of the trading day.

3.2.3 Sustained high prices

As 1 MW of the 35 MW requirement for both lower and raise services was met by high priced capacity, prices for lower and raise regulation services were around $11 000/MW respectively for approximately eight hours, exceeding $5000/MW for 91 dispatch intervals.

Figure 1 and Figure 2 show actual price (purple line)[1] and effective available capacity over the high price period. Box 2 explains the concept of “effective” availability. The (constant) 35 MW requirement is shown as a red line. The blue shaded areas indicate

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

effective available capacity below $5000/MW, while effective available capacity above $5000/MW is shaded light orange.

The inset graphs are designed to show the reduction in low priced capacity from 4.05 am (the start of the new trading day). The inset graphs clearly show the red line just inside the orange shaded area, meaning that some high priced capacity was needed to meet the requirement. As a result, prices for regulation services increased from around $300/MW at 4 am to around $11 000/MW from 4.05 am to 10.50 am.

Figure 1: Lower regulation effective offers and price

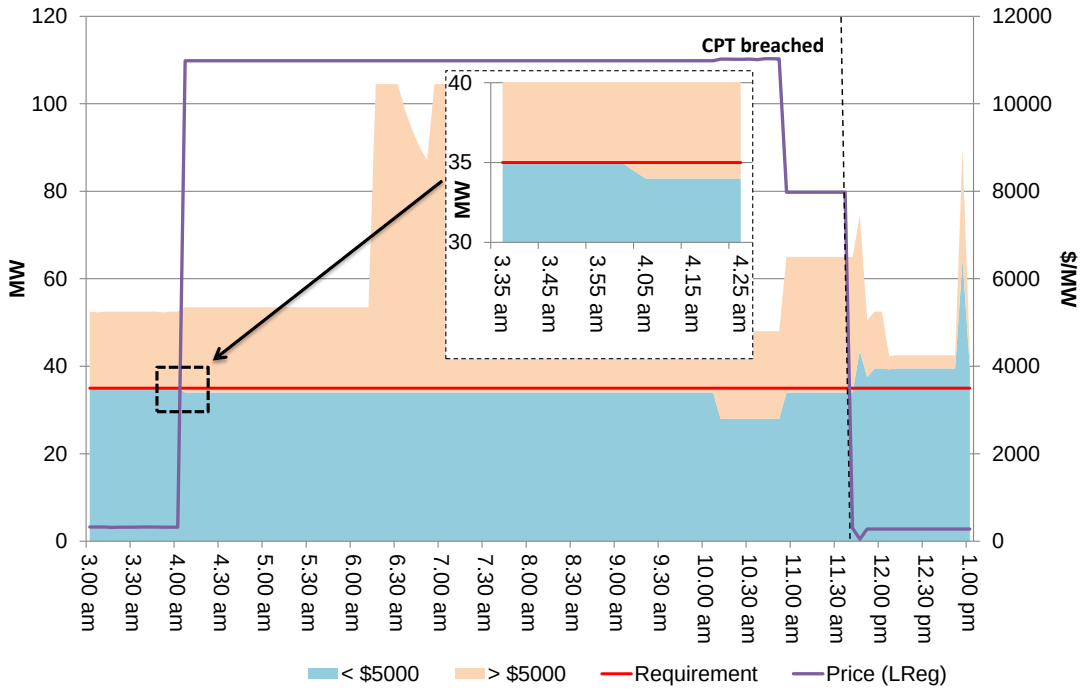
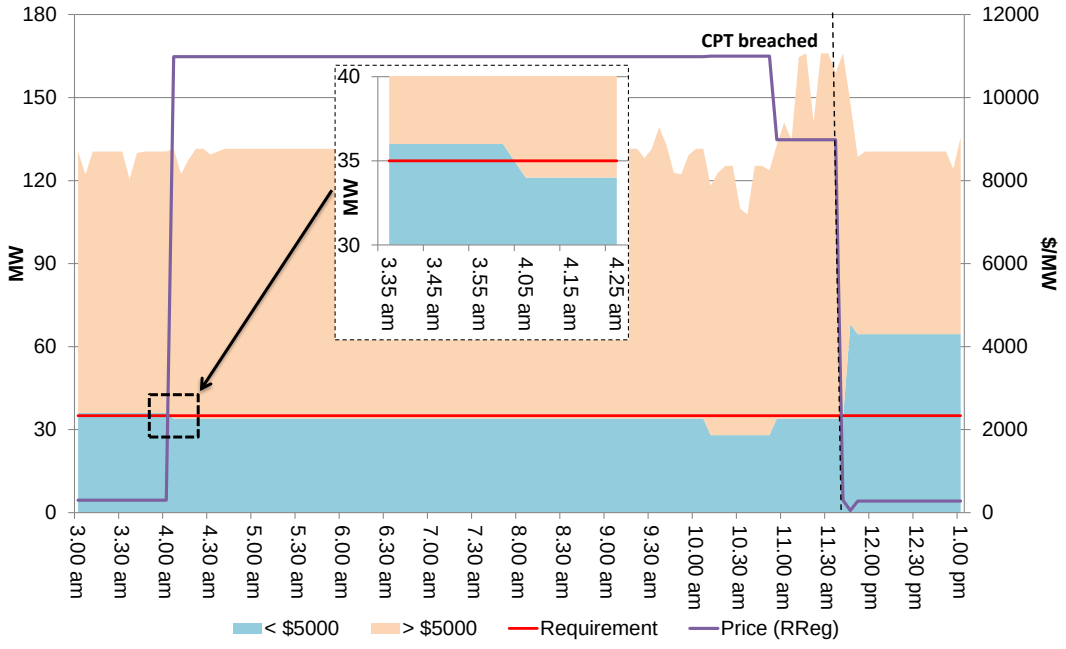


Figure 2: Raise regulation effective offers and price



3.2.3.1 Why prices fell at 10.55 am

Figure 1 and Figure 2 show prices for regulation services fell from around 10.55 am.

At 10.10 am Origin's Osborne power station Automatic Generator Control (AGC) became unavailable. AGCs allow power stations to automatically respond to regulation services signals from AEMO. AGCs must be enabled for generators to be considered eligible to provide regulation services. This resulted in the effective loss of all regulation services at Osborne, 6 MW of which was priced below $5000/MW, and as a result, the price increased from $10 984/MW at 10.05 am to $11 020/MW for lower regulation services and $11 000/MW for raise regulation services at 10.10 am (Figures D3b and D7b in Appendix D highlight the decrease in availability). The reduction in regulation services priced below $5000/MW is reflected in the reduction in the blue shaded areas in Figure 1 and Figure 2 from 10.05 am.

In response to the loss of the AGC at Osborne (and the resultant loss of 6 MW of regulation services), at 10.18 am, effective from 10.25 am , Origin rebid Quarantine available for regulation services, offering 6 MW of capacity priced under $5000/MW. According to the way the offer was structured, Origin could only commence providing regulation services in the event that they generated more than 74 MW in the energy market. This happened at 10.55 am, which saw prices fall to $7980/MW and $8985/MW for lower and raise regulation services respectively.

3.2.3.2 Administered pricing

Under the National Electricity Rules, if the sum of the preceding 2016 dispatch interval prices exceeds six times the CPT (6 x $210 100[2], or $1 260 600) for any FCAS, then the administered price cap of $300/MW is applied to all services.[3] As cumulative prices for lower and raise regulation services exceeded six times the CPT at 11.35 am, the administered price cap took effect from 11.40 am. Administered pricing remained in place until 2 December cumulative prices fell below the threshold.

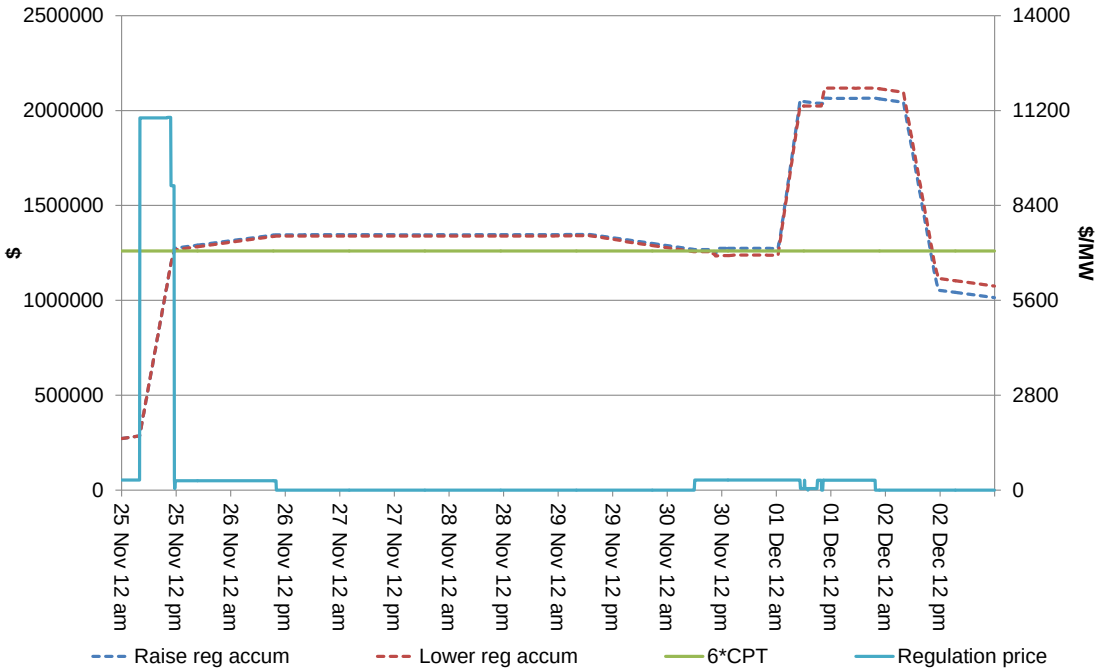
Figure 3 shows the cumulative prices for lower (dashed red line) and raise (dashed blue line) regulation services, the dispatch prices for both services (solid blue line[4]) and six times the CPT value (solid green line at $1 260 600).

2 CPT for 2016/17

3 Clause 3.14.2

4 Prices of both raise and lower regulation services were very similar across the day of the outage

Figure 3: South Australian local regulation services price, cumulative price and CPT



During an administered price period the cumulative price is calculated using uncapped prices based on generator offers. In other words the cumulative price is calculated according to what the price would have been, had the administered price cap not been applied. The dashed red and blue lines continue above the green line because prices based on generator offers remained high beyond 11.40 pm, the time the administered price cap (of $300/MW) was imposed.

Australian Energy Regulator

September 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 follows[5].

- Regulation FCAS: Cost recovery on a "causer pays" basis using the Causer Pays Procedure[6] 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 generators' 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.

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

6 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 25 November – lower regulation

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from ($/MW)	Price to ($/MW)	Rebid reason
10.18 am	10.25 am	Origin	Quarantine	46	NA	>0*	1014P change in avail - redistribution from osb sl
10.57 am	11.05 am	Origin	Osborne	-6	0	N/A	1055P MW redistribution sl

Table C 2: Significant rebids for 25 November– raise regulation

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from ($/MW)	Price to ($/MW)	Rebid reason
10.18 am	10.25 am	Origin	Quarantine	46	NA	>0*	1014P change in avail - redistribution from osb sL
10.57 am	11.05 am	Origin	Osborne	-6	0	N/A	1055P MW redistribution sl

*6 MW was priced at $0/MW while 40 MW was priced above $7980/MW

Appendix D: Closing bids

Figures D1a to D8b highlight for each dispatch interval, the lower and raise regulation services closing bids for Origin, AGL and Engie (the only 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.

Regulation services, like all other FCAS services, are co-optimised with energy offers. For example a generator that is operating at its maximum capacity cannot provide raise services so its 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.

Lower Regulation

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

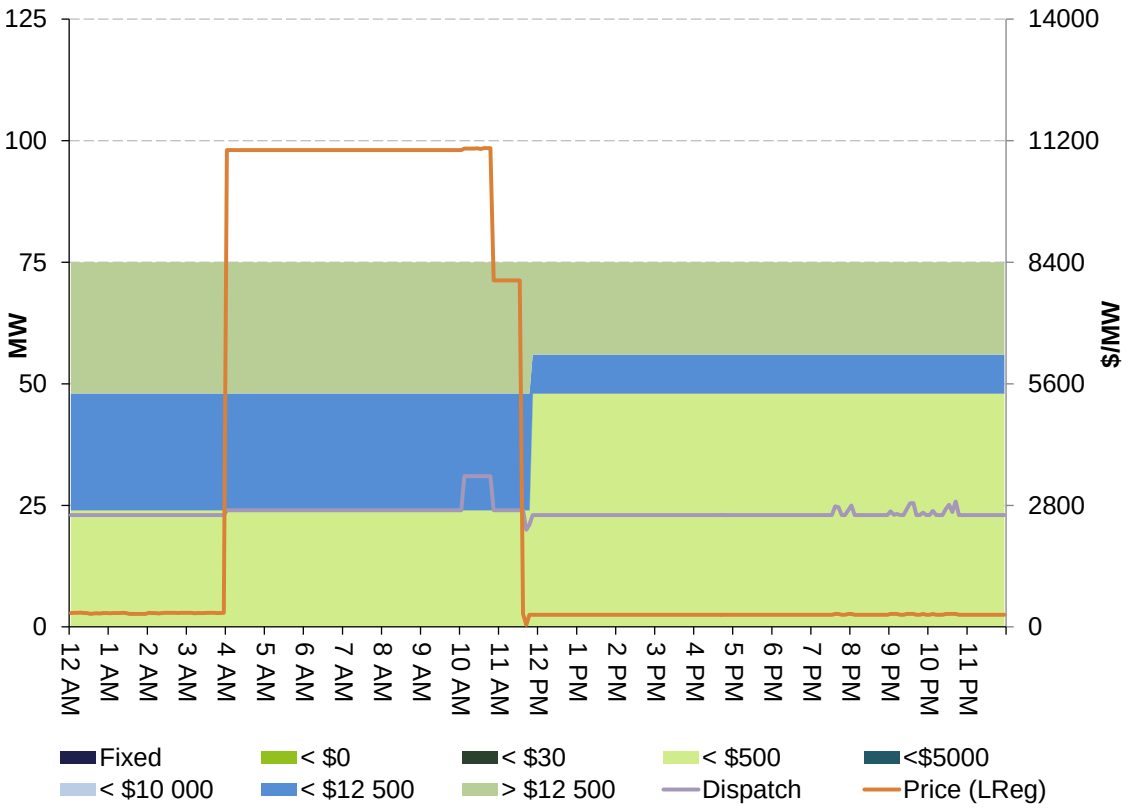


Figure D1b: Torrens Island (AGL) lower regulation service closing bid prices, dispatch and dispatch price – effective offers

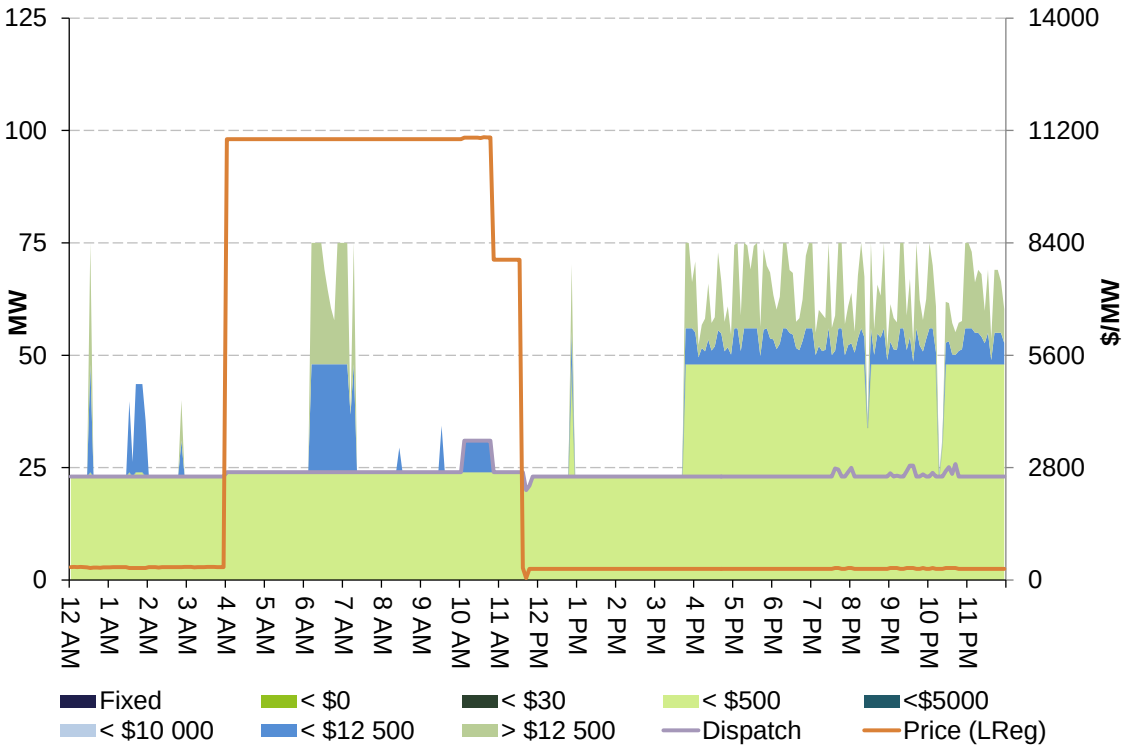


Figure D2a: Quarantine (Origin) lower regulation service closing bid prices, dispatch and dispatch price - maximum offers

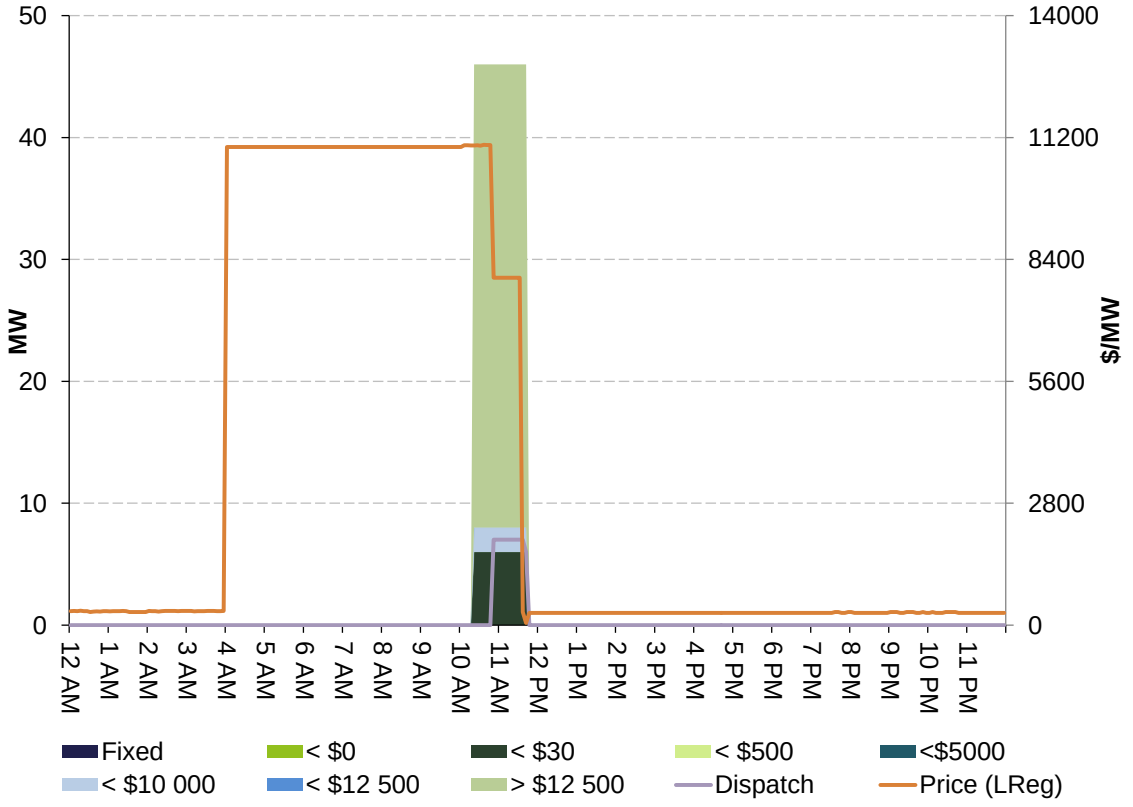


Figure D2b: Quarantine (Origin) lower regulation service closing bid prices, dispatch and dispatch price – effective offers

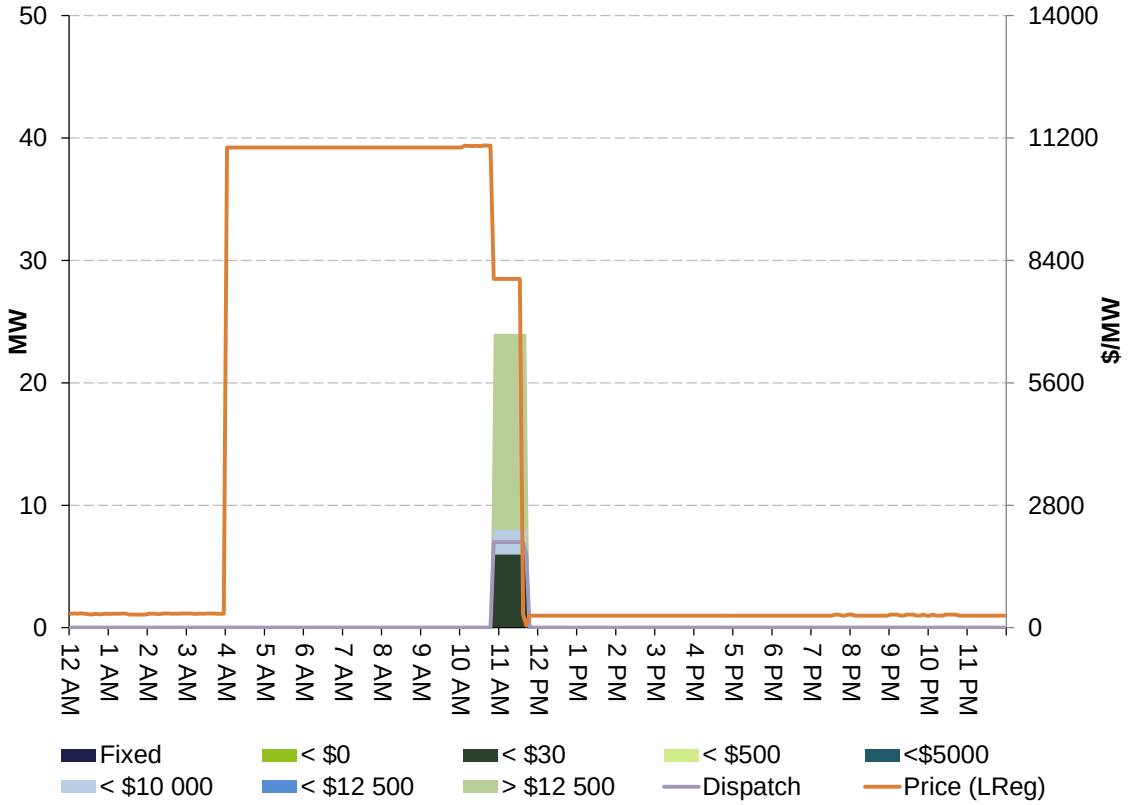


Figure D3a: Osborne (Origin) lower regulation service closing bid prices, dispatch and dispatch price – maximum offers

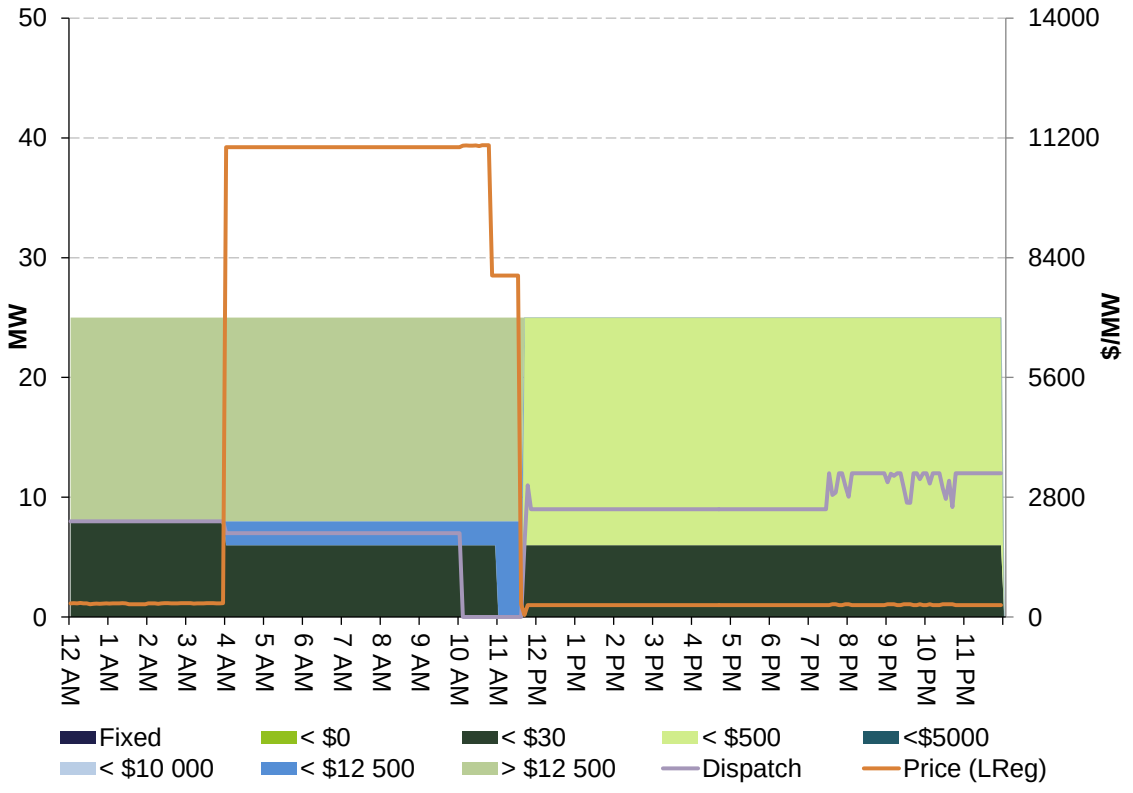


Figure D3b: Osborne (Origin) lower regulation service closing bid prices, dispatch and dispatch price – effective offers

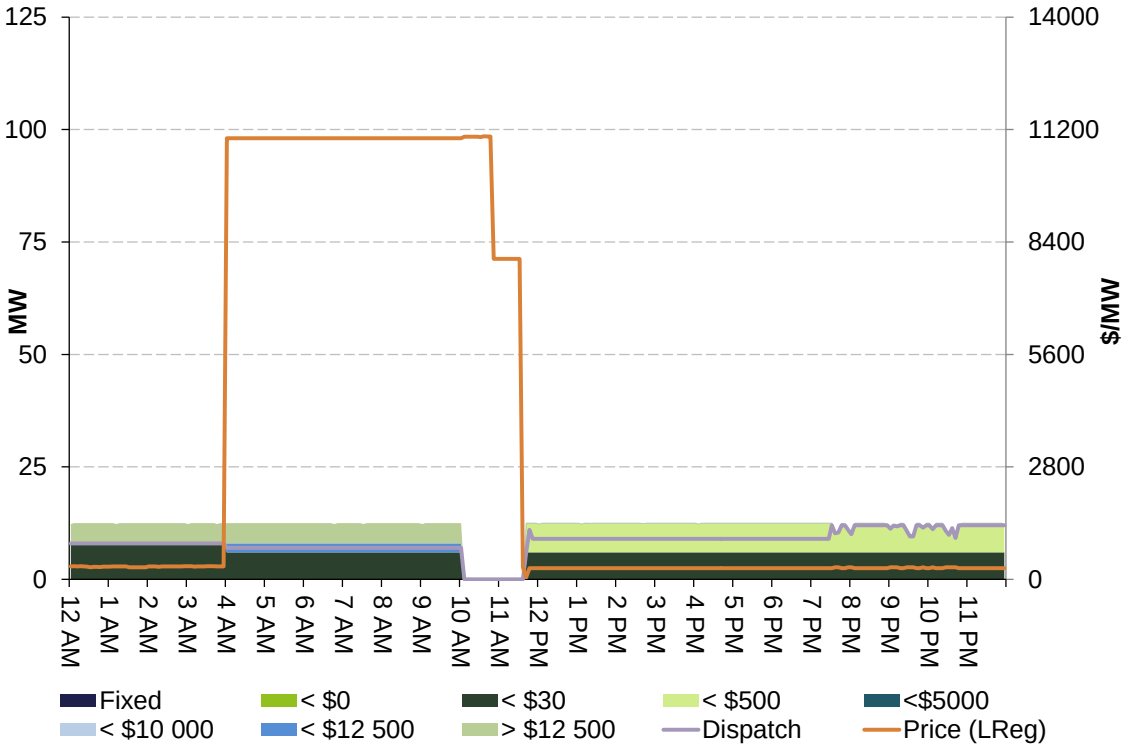


Figure D4a: Pelican Point (Engie) lower regulation service closing bid prices, dispatch and dispatch price – maximum offers

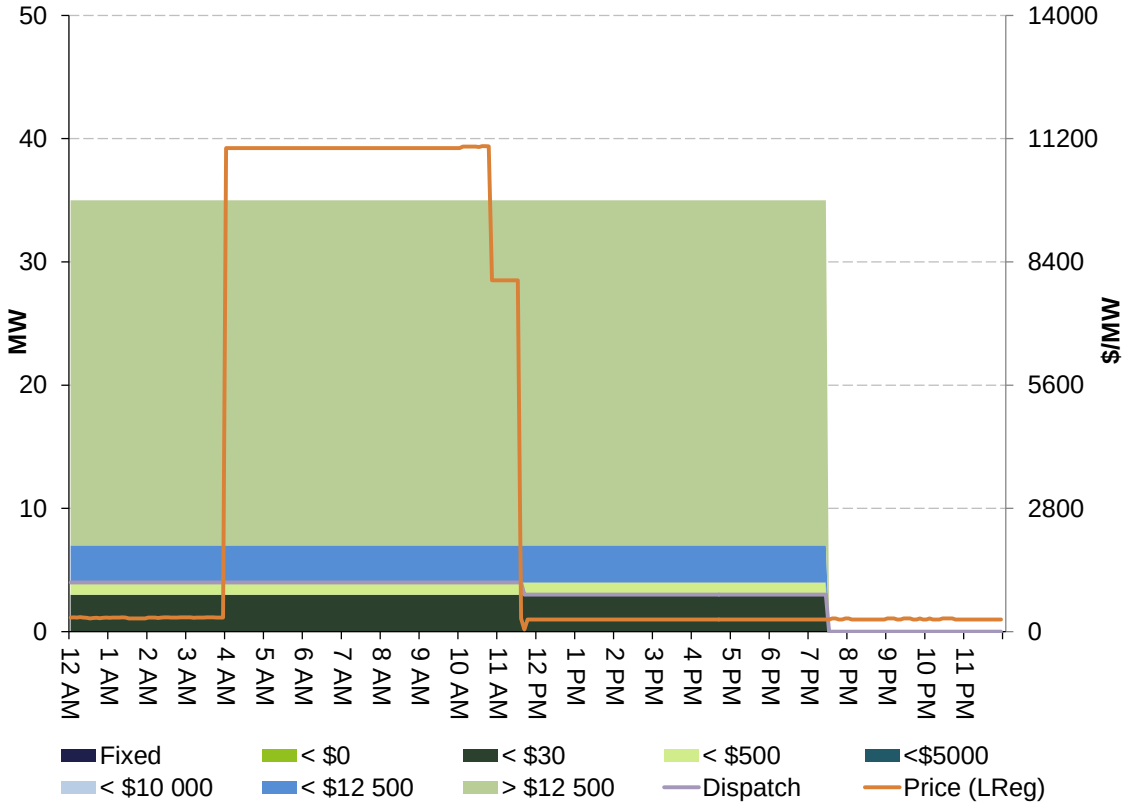
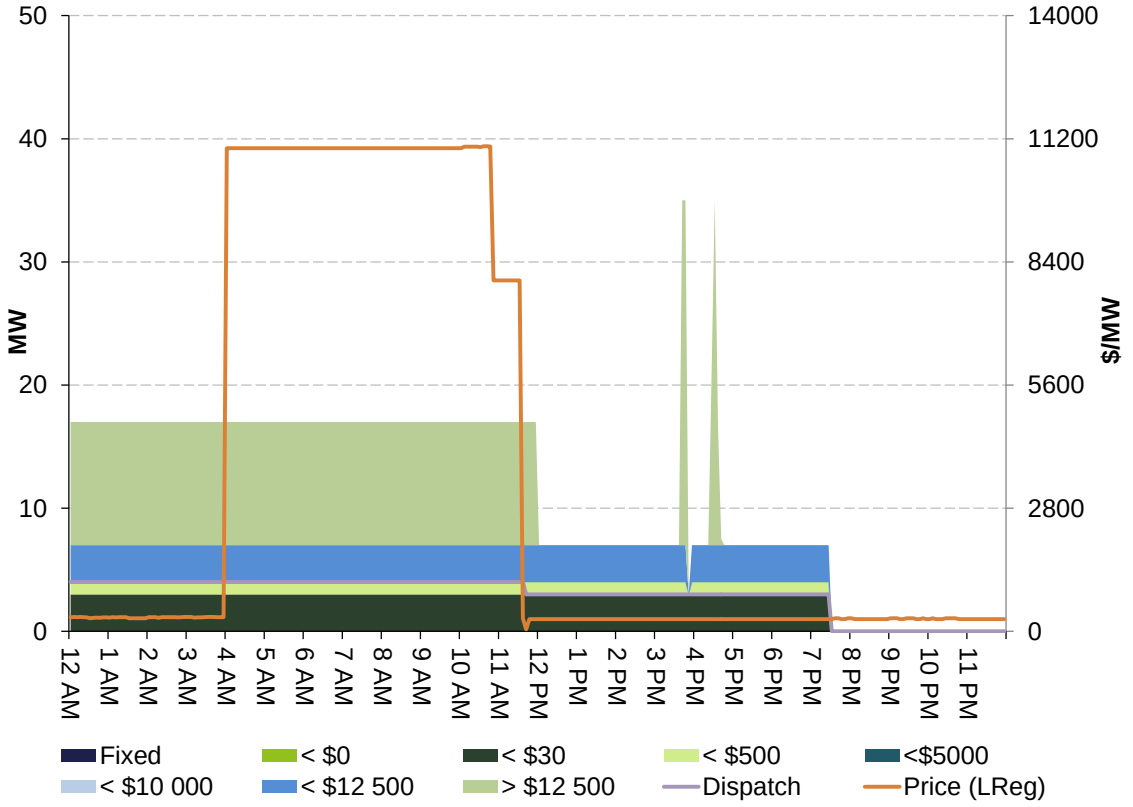


Figure D4b: Pelican Point (Engie) lower regulation service closing bid prices, dispatch and dispatch price – effective offers



Raise Regulation

Figure D5a: Torrens Island (AGL) raise regulation service closing bid prices, dispatch and dispatch price – maximum offers

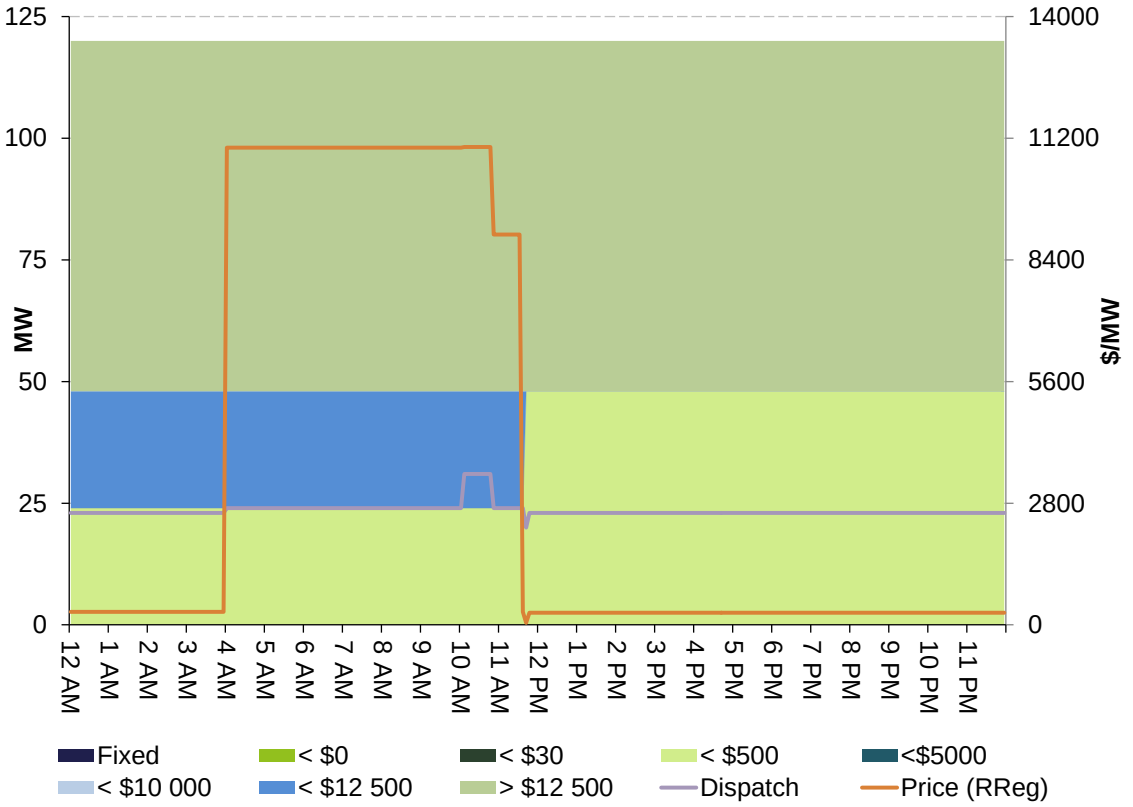


Figure D5b: Torrens Island (AGL) raise regulation service closing bid prices, dispatch and dispatch price – effective offers

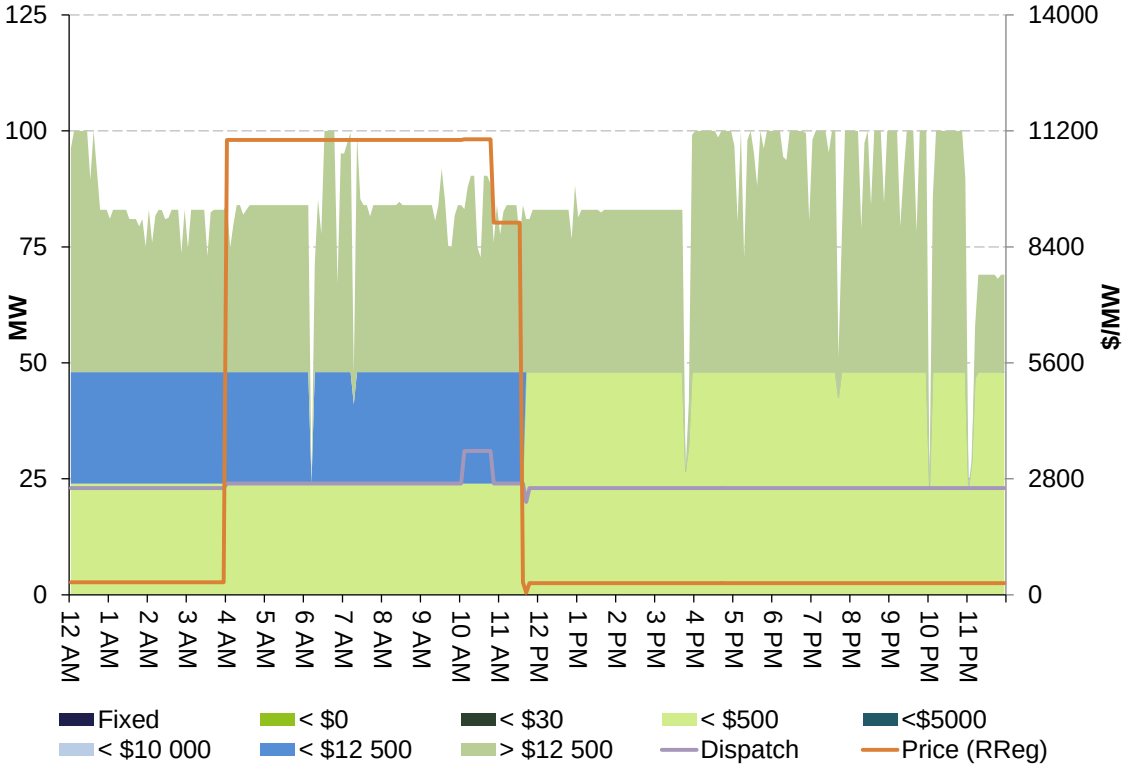


Figure D6a: Quarantine (Origin) raise regulation service closing bid prices, dispatch and dispatch price - maximum offers

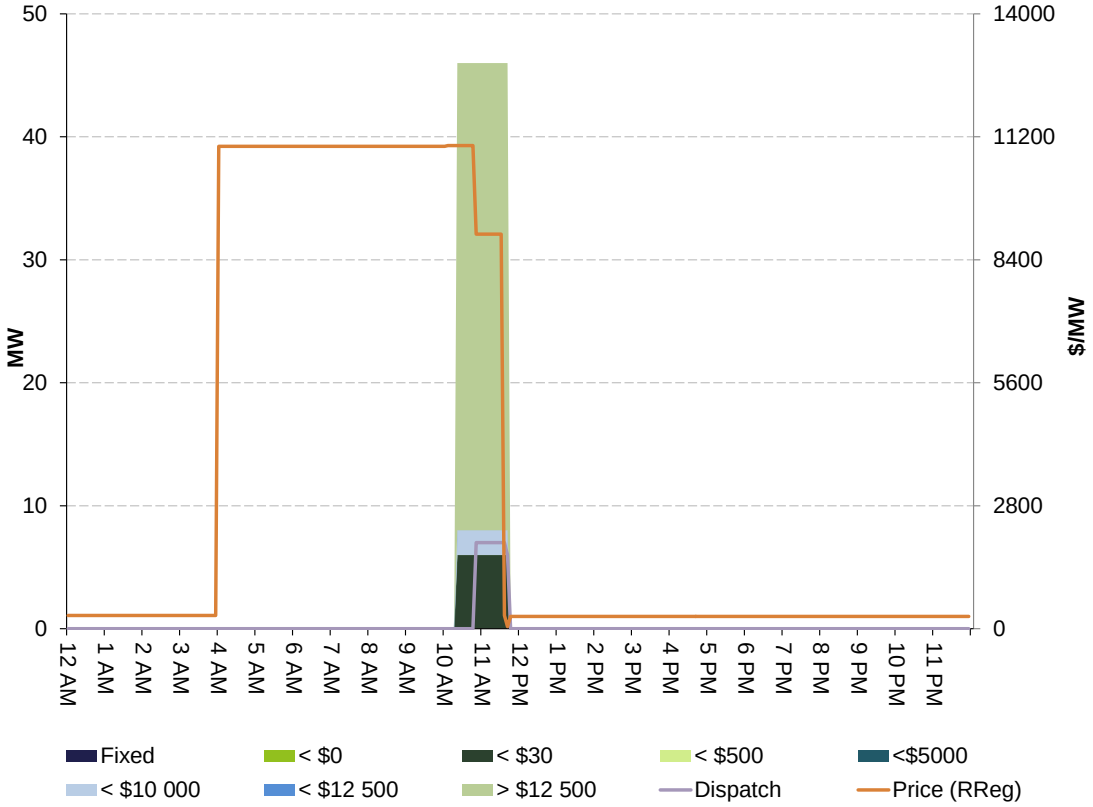


Figure D6b: Quarantine (Origin) raise regulation service closing bid prices, dispatch and dispatch price - effective offers

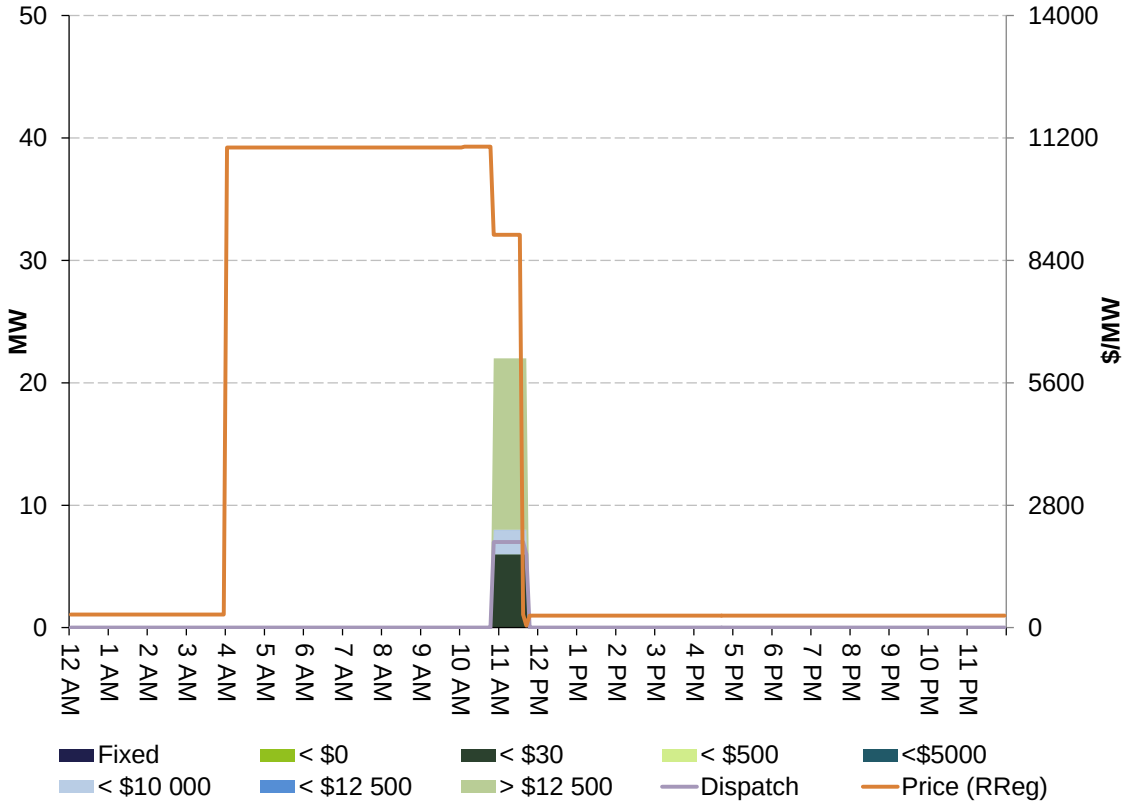


Figure D7a: Osborne (Origin) raise regulation service closing bid prices, dispatch and dispatch price - maximum offers

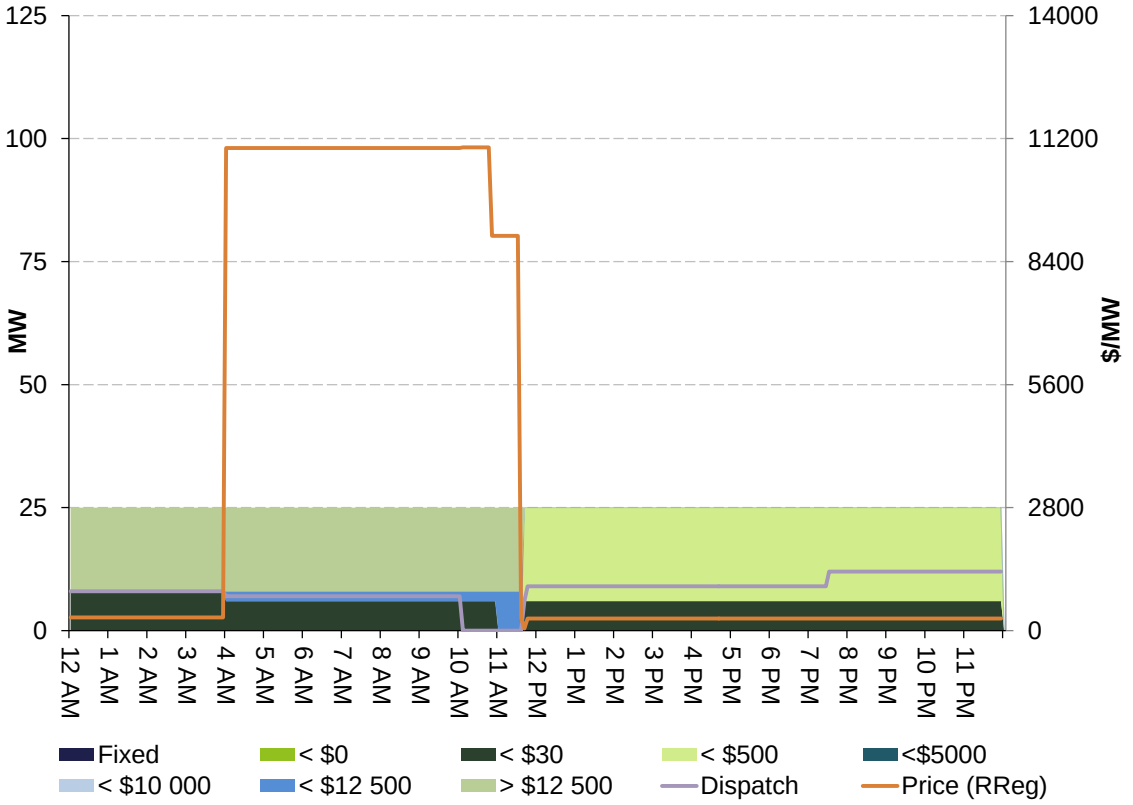


Figure D7b: Osborne (Origin) raise regulation service closing bid prices, dispatch and dispatch price – effective offers

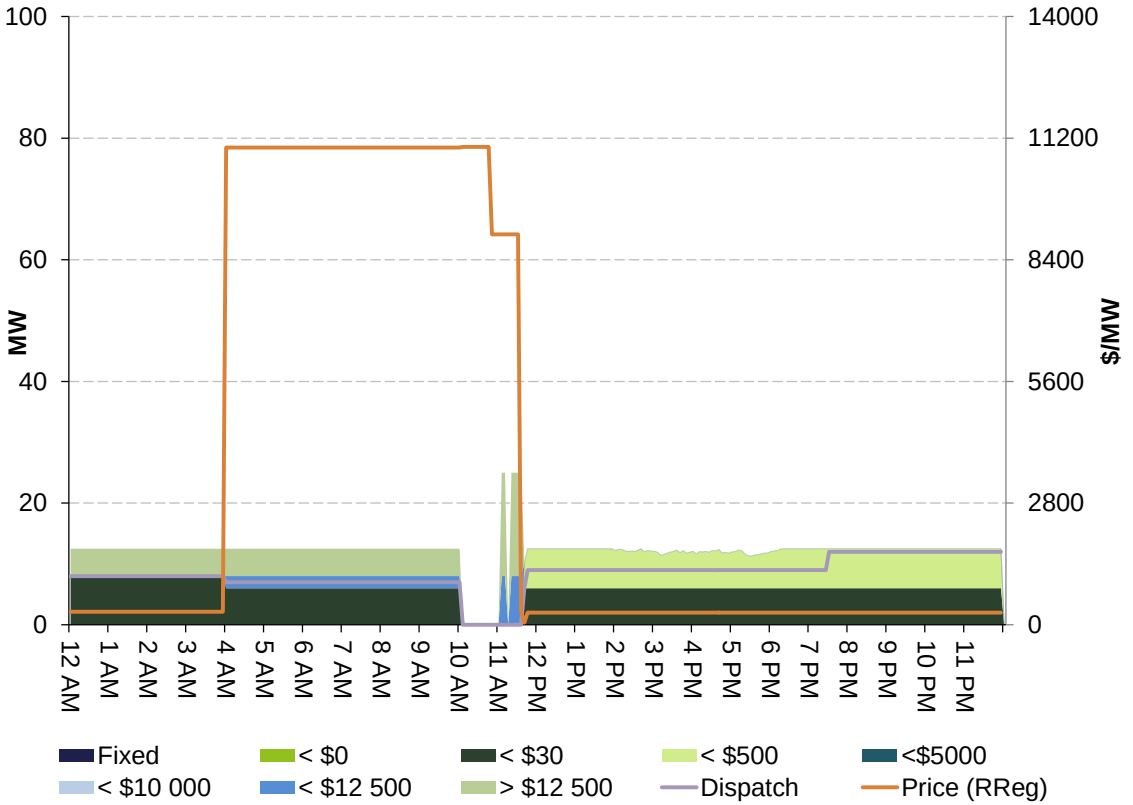


Figure D8a: Pelican Point (Engie) raise regulation service closing bid prices, dispatch and dispatch price for – maximum offers

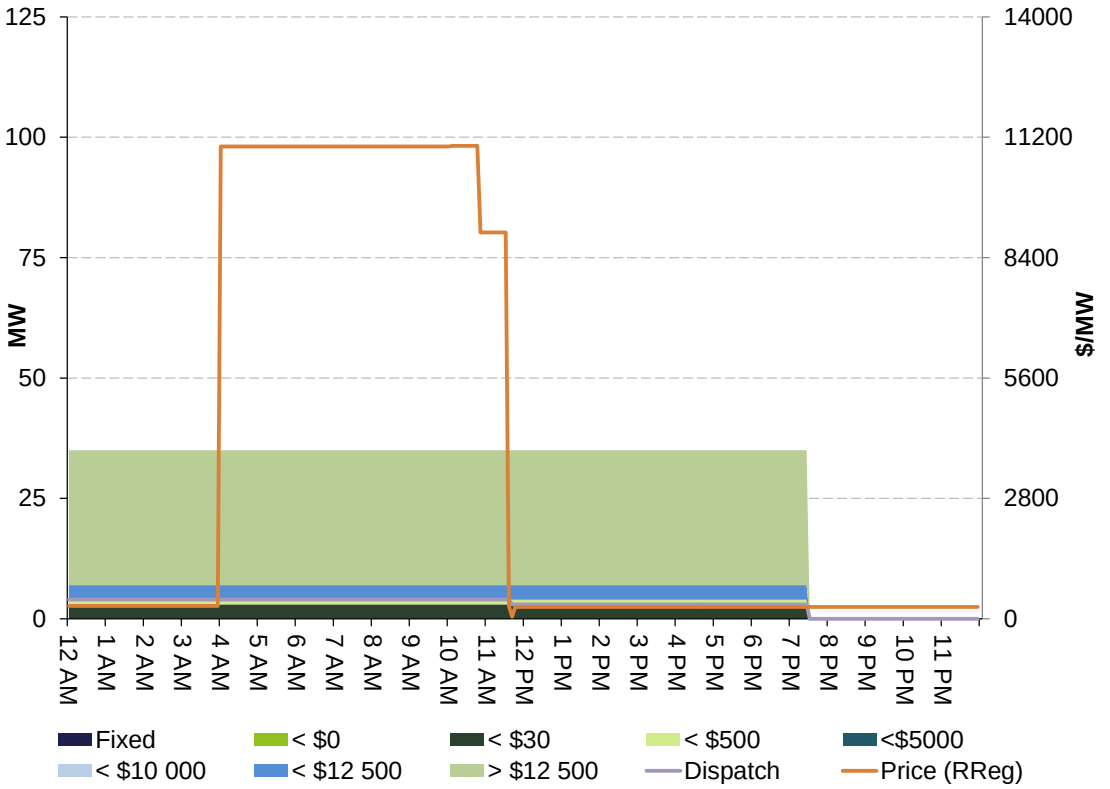
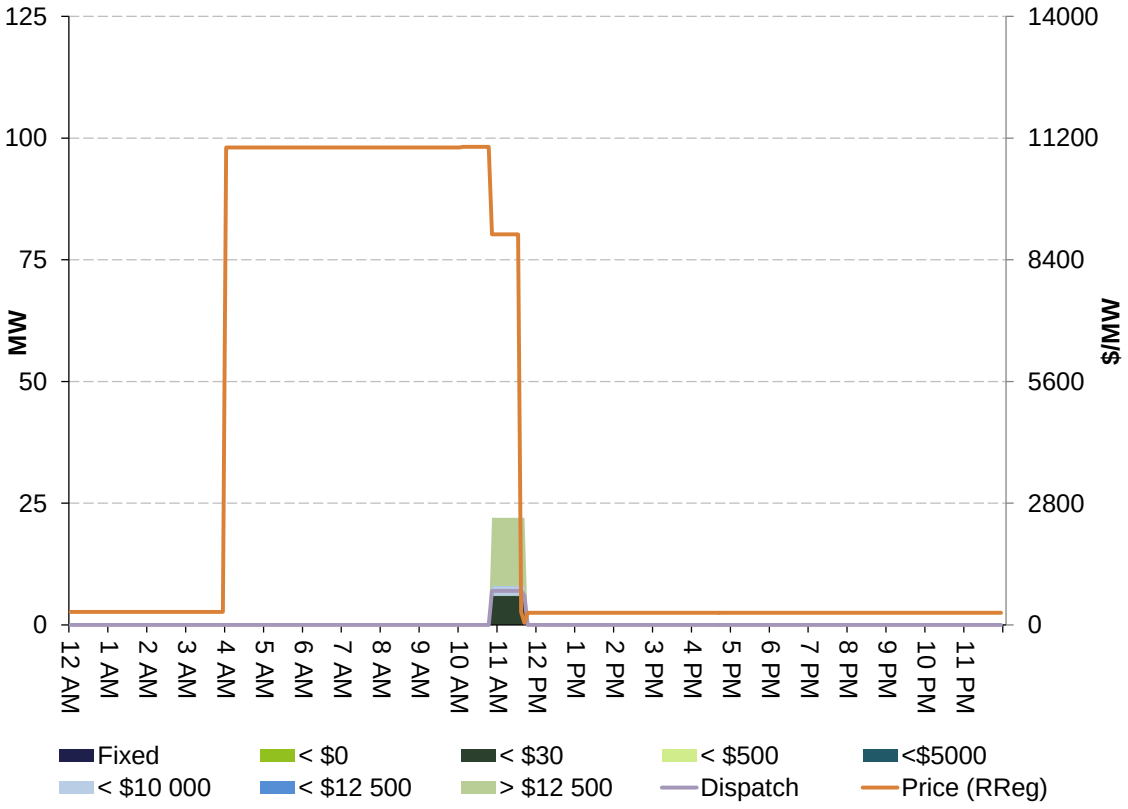


Figure D8b: Pelican Point (Engie) raise regulation service closing bid prices, dispatch and dispatch price – effective offers



Appendix E: Relevant Market Notices

The following market notices notified the market of the regulation requirement for South Australia.

Market Notice	Type	Date of issue	Last Changed
55466	General Notice	24/10/2016 10:59:35	24/10/2016 10:59:35

Reason

AEMO ELECTRICITY MARKET NOTICE.

This market notice is FOR INFORMATION ONLY.

The Heywood to South East No.1 275 kV line in South Australia and Victoria regions is planned out of service from 0700 hrs on 22 November 2016 to 1700 hrs on 26 November 2016. During this outage, Heywood 500/275 kV M1 transformer will be off-loaded

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

Under these circumstances, 35 MW of Raise and Lower regulation FCAS will be sourced from South Australia for the duration of this outage. 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-I-HYSE (includes F-S_LREG_0035 and F-S_RREG_0035)

I-HYSE

S-X_BC_CP

V-HYTX_M12

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

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

Terry Liu

AEMO Operations

Market Notice	Type	Date of issue	Last Changed
55840	General Notice	25/11/2016 11:30:20	25/11/2016 11:30:20

Reason

AEMO ELECTRICITY MARKET NOTICE

Issued by Australian Energy Market Operator Ltd at 1130 hrs on 25 November 2016

ADMINISTERED PRICE PERIOD DECLARED in SA region.

AEMO has determined that the rolling sum of the uncapped market ancillary Raise Reg services(s) prices for the SA region over the previous 2016 dispatch intervals has exceeded 6 times the cumulative price threshold (CPT) of $210,100.00.

In accordance with Clause 3.14 of the National Electricity Rules, AEMO has determined that an administered price period will commence at the dispatch interval starting 1135 hrs on 25 Nov 2016 and will continue through to the end of that trading day.

An administered price cap (APC) of 300 $/MWh will apply to all dispatch intervals during this administered price period. This APC will apply to all market ancillary service prices in the SA region.

An administered floor price (AFP) of 0 $/MWh AFP will apply to all market ancillary service prices.

AEMO will continue to monitor the rolling sum of the uncapped market ancillary service prices and issue further market notices as required.

This is an AEMO autogenerated Market Notice.

Market Notice	Type	Date of issue	Last Changed
55844	General Notice	26/11/2016 10:44:04	26/11/2016 10:44:04

Reason

AEMO ELECTRICITY MARKET NOTICE.

Refer Market Notice 55466

The Heywood to South East No.1 275 kV transmission liine in South Australia and Victoria regions was returned to service early at 1000 hrs on 26/11/2016.

The following constraint sets have been revoked at 1000hrs 26/11/2016:

F-I-HYSE (includes F-S_LREG_0035 and F-S_RREG_0035)
I-HYSE
S-X_BC_CP
V-HYTX_M12
The constraint sets contain equations with the following interconnectors on the LHS

NSW1-QLD1
N-Q_MNSP1
VIC1-NSW1
V-S_MNSP1
VIC1-SA1
Refer AEMO Network Outage Schedule (NOS) for further details.

Manager NEM Real Time Operations

Market Notice	Type	Date of issue	Last Changed
55845	Inter-Regional Transfer	26/11/2016 10:53:04	26/11/2016 10:44:04

Reason

AEMO ELECTRICITY MARKET NOTICE.

Refer Market Notice 55844

The Heywood to South East No.1 275 kV transmission liine in South Australia and Victoria regions was returned to service early at 1000 hrs on 26/11/2016.

The following constraint sets have been revoked at 1000hrs 26/11/2016:
F-I-HYSE (includes F-S_LREG_0035 and F-S_RREG_0035)
I-HYSE
S-X_BC_CP
V-HYTX_M12

The constraint sets contain equations with the following interconnectors on the LHS (Correction of interconnectors listed in Market Notice 55844)
NSW1-QLD1
T-V-MNSP1
VIC1-NSW1
V-S-MNSP1
V-SA

Refer AEMO Network Outage Schedule (NOS) for further details.
Manager NEM Real Time 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.[7] 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 - 25 November

DI	Dispatch Price ($/MW)	Participant	Unit	Service	Offer price ($/MW)	Marginal change	Contribution
04:05	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
04:10	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
04:15	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
04:20	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
04:25	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
04:30	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
04:35	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
04:40	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
04:45	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
04:50	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
04:55	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
05:00	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
05:05	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
05:10	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
05:15	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
05:20	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
05:25	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
05:30	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
05:35	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
05:40	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
05:45	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
05:50	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
05:55	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
06:00	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
06:05	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00

[7] 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
06:10	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
06:15	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
06:20	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
06:25	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
06:30	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
06:35	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
06:40	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
06:45	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
06:50	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
06:55	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
07:00	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
07:05	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
07:10	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
07:15	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
07:20	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
07:25	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
07:30	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
07:35	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
07:40	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
07:45	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
07:50	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
07:55	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
08:00	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
08:05	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
08:10	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
08:15	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
08:20	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
08:25	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
08:30	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
08:35	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
08:40	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
08:45	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
08:50	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
08:55	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
09:00	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
09:05	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
09:10	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
09:15	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00

DI	Dispatch Price ($/MW)	Participant	Unit	Service	Offer price ($/MW)	Marginal change	Contribution
09:20	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
09:25	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
09:30	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
09:35	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
09:40	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
09:45	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
09:50	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
09:55	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
10:00	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
10:05	$10 984.00	Origin Energy	OSB-AG	Lower reg	$10 984.00	-1.00	-$10 984.00
10:10	$11 020.31	AGL (SA)	TORRB2	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB3	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB4	Lower reg	$11 000.00	-0.33	-$3630.00
		Stanwell	STAN-1	Energy	$55.68	0.11	$6.12
		Stanwell	STAN-2	Energy	$55.68	0.11	$6.12
		Stanwell	STAN-3	Energy	$55.68	0.11	$6.12
		Stanwell	STAN-4	Energy	$55.68	0.11	$6.12
		AGL (SA)	TORRB2	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB3	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB4	Energy	$49.99	-0.33	-$16.50
		Engie	LOYYB1	Energy	$10.50	0.24	$2.52
		Engie	LOYYB2	Energy	$10.50	0.24	$2.52
10:15	$11 020.94	AGL (SA)	TORRB2	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB3	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB4	Lower reg	$11 000.00	-0.33	-$3630.00
		Stanwell	TARONG#4	Energy	$55.66	0.43	$23.93
		AGL (SA)	TORRB2	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB3	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB4	Energy	$49.99	-0.33	-$16.50
		Engie	LOYYB1	Energy	$10.50	0.24	$2.52
		Engie	LOYYB2	Energy	$10.50	0.24	$2.52
10:20	$11 019.16	AGL (SA)	TORRB2	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB3	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB4	Lower reg	$11 000.00	-0.33	-$3630.00
		Stanwell	STAN-3	Energy	$55.68	0.23	$12.81
		Stanwell	STAN-4	Energy	$55.68	0.23	$12.81
		AGL (SA)	TORRB2	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB3	Energy	$49.99	-0.33	-$16.50

DI	Dispatch Price ($/MW)	Participant	Unit	Service	Offer price ($/MW)	Marginal change	Contribution
		AGL (SA)	TORRB4	Energy	$49.99	-0.33	-$16.50
		Engie	LOYYB1	Energy	$10.50	0.25	$2.63
		Engie	LOYYB2	Energy	$10.50	0.25	$2.63
10:25	$11 018.72	AGL (SA)	TORRB2	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB3	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB4	Lower reg	$11 000.00	-0.33	-$3630.00
		Stanwell	STAN-1	Energy	$55.68	0.12	$6.68
		Stanwell	STAN-2	Energy	$55.68	0.12	$6.68
		Stanwell	STAN-3	Energy	$55.68	0.12	$6.68
		Stanwell	STAN-4	Energy	$55.68	0.12	$6.68
		AGL (SA)	TORRB2	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB3	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB4	Energy	$49.99	-0.33	-$16.50
		Engie	LOYYB1	Energy	$10.50	0.25	$2.63
		Engie	LOYYB2	Energy	$10.50	0.25	$2.63
10:30	$11 021.87	AGL (SA)	TORRB2	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB3	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB4	Lower reg	$11 000.00	-0.33	-$3630.00
		Stanwell	TARONG#4	Energy	$55.66	0.42	$23.38
		AGL (SA)	TORRB2	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB3	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB4	Energy	$49.99	-0.33	-$16.50
		Engie	LOYYB1	Energy	$10.50	0.23	$2.42
		Engie	LOYYB2	Energy	$10.50	0.23	$2.42
10:35	$11 009.98	AGL (SA)	TORRB3	Lower reg	$11 000.00	-1.00	-$11000.00
		AGL Energy	LD03	Raise 60 sec	$6.80	-1.72	-$11.70
		AGL Energy	LD04	Raise 6 sec	$6.80	-0.83	-$5.64
		AGL (SA)	TORRB3	Raise 60 sec	$3.04	1.72	$5.23
		AGL (SA)	TORRB3	Raise 6 sec	$2.60	0.83	$2.16
10:40	$11 030.16	AGL (SA)	TORRB2	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB3	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB4	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB2	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB3	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB4	Energy	$49.99	-0.33	-$16.50
		Snowy Hydro	MURRAY	Energy	$45.01	0.35	$15.75
		Engie	LOYYB1	Energy	$10.50	0.18	$1.89
		Engie	LOYYB2	Energy	$10.50	0.18	$1.89

DI	Dispatch Price ($/MW)	Participant	Unit	Service	Offer price ($/MW)	Marginal change	Contribution
10:45	$11 028.08	AGL (SA)	TORRB2	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB3	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB4	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB2	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB3	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB4	Energy	$49.99	-0.33	-$16.50
		Snowy Hydro	MURRAY	Energy	$45.01	0.39	$17.55
		Engie	LOYYB1	Energy	$10.50	0.20	$2.10
		Engie	LOYYB2	Energy	$10.50	0.20	$2.10
10:50	$11 027.28	AGL (SA)	TORRB2	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB3	Lower reg	$11 000.00	-0.33	-$3630.00
		AGL (SA)	TORRB4	Lower reg	$11 000.00	-0.33	-$3630.00
		Stanwell	STAN-1	Energy	$55.68	0.08	$4.45
		Stanwell	STAN-2	Energy	$55.68	0.08	$4.45
		Stanwell	STAN-3	Energy	$55.68	0.08	$4.45
		Stanwell	STAN-4	Energy	$55.68	0.08	$4.45
		AGL (SA)	TORRB2	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB3	Energy	$49.99	-0.33	-$16.50
		AGL (SA)	TORRB4	Energy	$49.99	-0.33	-$16.50
		Engie	LOYYB1	Energy	$10.50	0.20	$2.10
		Engie	LOYYB2	Energy	$10.50	0.20	$2.10
10:55	$7980.00	Origin Energy	QPS5	Lower reg	$7980.00	-1.00	-$7980.00
11:00	$7980.00	Origin Energy	QPS5	Lower reg	$7980.00	-1.00	-$7980.00
11:05	$7980.00	Origin Energy	QPS5	Lower reg	$7980.00	-1.00	-$7980.00
11:10	$7980.00	Origin Energy	QPS5	Lower reg	$7980.00	-1.00	-$7980.00
11:15	$7980.00	Origin Energy	QPS5	Lower reg	$7980.00	-1.00	-$7980.00
11:20	$7980.00	Origin Energy	QPS5	Lower reg	$7980.00	-1.00	-$7980.00
11:25	$7980.00	Origin Energy	QPS5	Lower reg	$7980.00	-1.00	-$7980.00
11:30	$7980.00	Origin Energy	QPS5	Lower reg	$7980.00	-1.00	-$7980.00
11:35	$7980.00	Origin Energy	QPS5	Lower reg	$7980.00	-1.00	-$7980.00
11:40	$7980.00	Origin Energy	QPS5	Lower reg	$7980.00	-1.00	-$7980.00

Raise regulation 25 November

DI	Dispatch Price ($/MW)	Participant	Unit	Service	Offer price ($/MW)	Marginal change	Contribution
04:05	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
04:10	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00

DI	Dispatch Price ($/MW)	Participant	Unit	Service	Offer price ($/MW)	Marginal change	Contribution
04:15	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
04:20	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
04:25	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
04:30	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
04:35	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
04:40	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
04:45	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
04:50	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
04:55	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
05:00	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
05:05	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
05:10	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
05:15	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
05:20	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
05:25	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
05:30	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
05:35	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
05:40	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
05:45	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
05:50	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
05:55	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
06:00	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
06:05	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
06:10	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
06:15	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
06:20	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
06:25	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
06:30	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
06:35	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
06:40	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
06:45	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
06:50	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
06:55	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
07:00	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
07:05	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
07:10	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
07:15	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
07:20	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00

DI	Dispatch Price ($/MW)	Participant	Unit	Service	Offer price ($/MW)	Marginal change	Contribution
07:25	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
07:30	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
07:35	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
07:40	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
07:45	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
07:50	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
07:55	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
08:00	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
08:05	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
08:10	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
08:15	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
08:20	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
08:25	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
08:30	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
08:35	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
08:40	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
08:45	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
08:50	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
08:55	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
09:00	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
09:05	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
09:10	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
09:15	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
09:20	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
09:25	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
09:30	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
09:35	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
09:40	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
09:45	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
09:50	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
09:55	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
10:00	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
10:05	$10 984.00	Origin Energy	OSB-AG	Raise reg	$10 984.00	-1.00	-$10 984.00
10:10	$11 000.00	AGL (SA)	TORRB3	Raise reg	$11 000.00	-1.00	-$11 000.00
10:15	$11 000.00	AGL (SA)	TORRB3	Raise reg	$11 000.00	-1.00	-$11 000.00
10:20	$11 000.00	AGL (SA)	TORRB4	Raise reg	$11 000.00	-1.00	-$11 000.00
10:25	$11 000.00	AGL (SA)	TORRB4	Raise reg	$11 000.00	-1.00	-$11 000.00
10:30	$11 000.00	AGL (SA)	TORRB3	Raise reg	$11 000.00	-1.00	-$11 000.00

DI	Dispatch Price ($/MW)	Participant	Unit	Service	Offer price ($/MW)	Marginal change	Contribution
10:35	$11 000.00	AGL (SA)	TORRB2	Raise reg	$11 000.00	-1.00	-$11 000.00
10:40	$11 000.00	AGL (SA)	TORRB4	Raise reg	$11 000.00	-1.00	-$11 000.00
10:45	$11 000.00	AGL (SA)	TORRB3	Raise reg	$11 000.00	-1.00	-$11 000.00
10:50	$11 000.00	AGL (SA)	TORRB3	Raise reg	$11 000.00	-1.00	-$11 000.00
10:55	$8985.00	Origin Energy	QPS5	Raise reg	$8985.00	-1.00	-$8985.00
11:00	$8985.00	Origin Energy	QPS5	Raise reg	$8985.00	-1.00	-$8985.00
11:05	$8985.00	Origin Energy	QPS5	Raise reg	$8985.00	-1.00	-$8985.00
11:10	$8985.00	Origin Energy	QPS5	Raise reg	$8985.00	-1.00	-$8985.00
11:15	$8985.00	Origin Energy	QPS5	Raise reg	$8985.00	-1.00	-$8985.00
11:20	$8985.00	Origin Energy	QPS5	Raise reg	$8985.00	-1.00	-$8985.00
11:25	$8985.00	Origin Energy	QPS5	Raise reg	$8985.00	-1.00	-$8985.00
11:30	$8985.00	Origin Energy	QPS5	Raise reg	$8985.00	-1.00	-$8985.00
11:35	$8985.00	Origin Energy	QPS5	Raise reg	$8985.00	-1.00	-$8985.00
11:40	$8985.00	Origin Energy	QPS5	Raise reg	$8985.00	-1.00	-$8985.00