



Electricity Pricing Event Reports

AUGUST 2015

TABLE OF CONTENTS

| | |
|--|----|
| Saturday 01 August 2015 – High Energy price SA..... | 2 |
| Sunday 02 August 2015 – High FCAS price TAS | 3 |
| Wednesday 05 August 2015 – High Energy price QLD | 3 |
| Thursday 06 August 2015 – High Energy price SA | 4 |
| Friday 07 August 2015 – High Energy price SA | 5 |
| Sunday 16 August 2015 – High Energy price SA | 6 |
| Monday 17 August 2015 – High Energy price SA..... | 7 |
| Thursday 20 August 2015 – High Energy price QLD..... | 7 |
| Thursday 27 August 2015 – High Energy price SA | 8 |
| Saturday 29 August 2015 – High FCAS price TAS..... | 9 |
| Sunday 30 August 2015 – High Energy price SA | 10 |



Saturday 01 August 2015 – High Energy price SA

Market Outcomes: South Australian spot price reached \$4,542.03/MWh for trading interval (TI) ending 1400 hrs.

South Australian FCAS prices and energy and FCAS prices for the other NEM regions were not affected by this event.

Detailed Analysis: 5-Minute dispatch price reached \$13,500/MWh in South Australia for dispatch intervals (DIs) ending 1355 hrs and 1400 hrs. The high price can be attributed to rebidding of generation capacity resulting in a steep supply curve during a period of low wind generation in South Australia.

The South Australian demand was 1,676 MW for TI ending 1400 hrs. During the high priced TI, wind generation in South Australia was 89 MW.

For DI ending 1355 hrs, AGL rebid 270 MW of generation capacity from Torrens Island B PS units 1, 3 and 4 from bands priced at or below \$64.99/MWh to bands priced at \$13,500/MWh. South Australian generation capacity was offered at less than \$591/MWh or above \$10,759/MWh resulting in a steep supply curve. Cheaper priced generation was available but limited due to ramp rates (Osbourne PS), FCAS profiles (Northern PS unit 1) or required more than one DI to synchronise (Ladbroke PS and Quarantine PS units 1 and 2).

For DI ending 1400 hrs, Origin Energy withdrew 48 MW of generation capacity from Quarantine PS. Cheaper priced generation was available but limited due to ramp rates (Osbourne PS), FCAS profiles (Northern PS unit 1) or required more than one DI to synchronise (Ladbroke PS).

For the high priced intervals, generation offers at \$13,500/MWh had to be cleared from Torrens Island B PS units to meet the demand for the high priced DIs. Northern PS unit 2 which generally offers capacity up to 273 MW was unavailable.

During the affected DIs, the target flow towards South Australia on the Heywood interconnector was constrained up to 439 MW by the Victoria to South Australia Heywood upper transfer limit thermal constraint equation, $V > S_{460}$ and the transient stability constraint equation, $V::S_NIL_MAXG_AUTO$. The $V::S_NIL_MAXG_AUTO$ constraint equation prevents transient instability by limiting flow on the Heywood interconnector from Victoria to South Australia for the loss of the largest generation block in South Australia.

The target flow on the Murraylink interconnector was limited to 220 MW towards South Australia by the Victoria to South Australia Murraylink upper transfer limit constraint equation $VSML_{220}$.

The 5-minute price reduced to \$54.99/MWh in the subsequent DI to the high priced intervals. 290 MW of generation capacity was shifted or rebid from higher price bands to bands priced at or below \$64.98/MWh which also contributed to reducing the dispatch price.

The high 30-minute spot price for South Australia was not forecast in the pre-dispatch schedules, as it was a result of rebidding or withdrawal of generation capacity within the affected trading interval.



Sunday 02 August 2015 – High FCAS price TAS

Market Outcomes: Tasmanian Frequency Control Ancillary Service price (sum of all services) reached \$8,789.42/MWh for trading interval (TI) ending 2300 hrs.

Energy and FCAS prices in the other NEM regions were not affected.

Further information is provided below.

Detailed Analysis: The Lower and Raise Regulation prices in Tasmania were at or above \$13,100/MWh for dispatch intervals (DIs) ending 2250 hrs and 2255 hrs. The high price can be attributed to insufficient regulation services in Tasmania due to Automatic Generation Control (AGC) suspension during a period when Basslink was unable to transfer FCAS from the mainland.

Between 2243 hrs and 2252 hrs, the AGC for a number of Hydro Tasmania generating units were temporarily suspended due to a frequency event. The only generator that was available to meet the regulation requirements was John Butters PS. For both FCAS regulation services, Hydro Tasmania offered 26 MW of John Butters PS capacity at or below \$3/MWh and the remaining capacity was offered at \$13,100/MWh.

For DIs ending 2250 hrs and 2255 hrs, the metered flow on the Basslink interconnector was 46 MW and 45 MW respectively. When the flow on Basslink is in the no-go zone (between -50 MW and +50 MW), the interconnector is unable to transfer FCAS from the mainland and all FCAS requirements have to be sourced from local generators within Tasmania.

The Regulation FCAS requirements in Tasmania increased from below 1 MW for DI ending 2245 hrs to 50 MW for DIs ending 2250 hrs and 2255 hrs. Due to the unavailability of cheaper regulation services, higher priced regulation capacity from John Butters PS was dispatched to meet the increased FCAS requirement for both higher priced DIs.

The FCAS prices reduced to below \$30/MWh for DI ending 2300 hrs when AGC was no longer suspended and Tasmanian generators were able to provide Regulation services at a lower price.

The high FCAS price for Tasmania was not forecast in the pre-dispatch schedules, as it was a result of AGC suspension within the affected trading interval.

Wednesday 05 August 2015 – High Energy price QLD

Market Outcomes: Queensland spot price reached \$4,847.38/MWh for trading interval (TI) ending 1900 hrs.

Queensland Frequency Control Ancillary Services (FCAS) prices and energy and FCAS prices for the other NEM regions were not affected by this event.

Detailed Analysis: 5-Minute dispatch price reached \$13,799.56/MWh and the Market Price Cap (MPC) of \$13,800/MWh for dispatch intervals (DIs) ending 1855 hrs and 1900 hrs respectively. The high price can be attributed to rebidding and withdrawal of generation capacity when interconnector flow was limited.



Between DIs ending 1835 hrs and 1855 hrs, Stanwell, CS Energy and ERM Power rebid a total of 905 MW of generation capacity from bands priced at or below than \$600.69/MWh to bands priced either at \$13,350.69/MWh or the MPC. Between DIs ending 1855 hrs and 1900 hrs, a total of 337 MW of generation capacity was withdrawn from Braemar units 2 and 6. For DIs ending 1855 hrs and 1900 hrs, cheaper priced generation was available from Millmerran unit 2 and Oakey PS, but was limited due to their ramp up rates. Cheaper priced generation was also available from the following fast start units but required more than one DI to synchronise:

- Braemar unit 6 for DI ending 1855 hrs
- Townsville GT (Yabulu) for DI ending 1900 hrs

During the affected DIs, the total target flow towards Queensland on the QNI and Terranora interconnectors was constrained up to 39 MW by an outage stability constraint equation N[^]Q_AR_VC_B1. The constraint equation prevents voltage collapse in New South Wales for the loss of the Kogan Creek PS during the outage of the Armidale 330 kV SVC. The target flow on the Terranora interconnector was also constrained by a thermal constraint equation N>LSDU_LSDU. This constraint equation manages the post-contingent flow on a Lismore – Dunoon 132 kV line for the trip of the parallel line.

The 5-minute price reduced to \$99.99/MWh in the subsequent DI to the high priced intervals. A total of 594 MW of generation capacity was shifted from bands priced at MPC to bands priced below \$55/MWh.

The high 30-minute spot price for Queensland was not forecast in the pre-dispatch schedules, as it was a result of rebidding or withdrawal of generation capacity within the affected trading interval.

Thursday 06 August 2015 – High Energy price SA

Market Outcomes: South Australian spot price reached \$2,310/MWh for trading interval (TI) ending 0000 hrs (on Friday, 07 August 2015).

FCAS prices and energy prices for the other NEM regions were not affected by this event.

Detailed Analysis: 5-Minute dispatch price reached \$13,333.95/MWh in South Australia for dispatch interval (DI) ending 2350 hrs on 06 August 2015. The high price can be attributed to rebidding during a period of high period due to hot water load management (ripple control). Between DIs ending 2325 hrs and 2350 hrs, the South Australian demand increased by 290 MW. This additional load represented a 15% increase in the South Australian demand.

Wind generation in South Australia was low at approximately 23 MW for TI ending 0000 hrs on 06 August 2015.

Between DIs ending 2335 hrs and 2345 hrs, a total of 304 MW of generation capacity from Quarantine PS and Northern PS was shifted or rebid from bands priced at or less than \$95/MWh to \$13,333.95/MWh or Market Price Cap (\$13,800/MWh).

For DI ending 2350 hrs, AGL rebid 95 MW of generation capacity from Torrens Island PS (Units A1, B1, B2, B3 and B4) from bands priced at or below \$64.99/MWh to bands priced at \$13,500/MWh or MPC. Cheaper priced generation was limited by ramp rates (Hallett PS and Osbourne PS) and fast-start units (Dry Creek units 2 and 3) which required time to synchronise.



For the high priced interval, generation offers at \$13,33.95/MWh had to be cleared from Northern PS to meet the demand for the high priced DI.

During the affected DI, the target flow towards South Australia on the Heywood interconnector was constrained to 460 MW by the Victoria to South Australia Heywood upper transfer limit thermal constraint equation, $V>S_{460}$. The target flow on the Murraylink interconnector was limited to 66 MW towards South Australia by an outage constraint equation, $V>S_{CB6033+6225_TX1}$. This constraint equation manages post-contingent flow on the North West Bend transformer no. 1 132/66 kV line during the planned outage of the North West Bend no. 3 132 kV transformer and its circuit breakers (CB6225 and CB6033) from 4 August 2015.

The 5-minute price reduced to \$34.36/MWh for the next interval (DI ending 2355 hrs) when the demand reduced by approximately 188 MW and 101 MW of non-scheduled generation came online. A total of 447 MW of generation capacity was also rebid from higher priced bands to bands priced at or below \$0/MWh.

The high 30-minute spot price for South Australia was not forecast in the pre-dispatch schedules, as it was a result of rebidding during the affected trading interval. The 5-minute load increase that caused a price spike in the 5-minute dispatch prices.

Friday 07 August 2015 – High Energy price SA

Market Outcomes: South Australian spot price reached \$2,315.18/MWh for trading interval (TI) ending 2200 hrs.

Frequency Control Ancillary Services (FCAS) prices in South Australia, and energy and FCAS prices for the other NEM regions were not affected by this event.

Detailed Analysis: 5-Minute dispatch price reached \$13,500/MWh in South Australia for dispatch interval (DI) ending 2155 hrs. The high price can be attributed to rebidding of generation capacity during period of low wind generation. Wind generation in South Australia was approximately 49 MW for TI ending 2200 hrs.

For DI ending 2155 hrs, AGL rebid 435 MW of generation capacity from Torrens Island PS from bands priced at less than \$125/MWh to either \$13,500/MWh or the Market Price Cap of \$13,800/MWh. Cheaper priced generation was limited by ramp up rates (Hallett PS and Northern PS) and fast-start units (Dry Creek units 2 and 3) which required time to synchronise.

For the high priced interval, generation offers at \$13,500/MWh had to be cleared from Torrens Island A to meet the demand for the high priced DI.

During the affected DI, the target flow towards South Australia on the Heywood interconnector was constrained to 437 MW by the thermal constraint equation, $V>S_{NIL_HYTX_HYTX}$. This system normal constraint equation manages post contingent flow on the Heywood transformer by reducing the Heywood interconnector flow when the actual flow exceeds the pre-defined transformer rating. The target flow on the Murraylink interconnector was limited to 57 MW towards South Australia by an outage constraint equation, $V>S_{CB6033+6225_TX1}$. This constraint equation manages post-contingent flow on the North West Bend transformer no. 1 132/66 kV line during the planned outage of the North West Bend no. 3 132 kV transformer and its circuit breakers (CB6225 and CB6033) from 4 August 2015.



The 5-minute price reduced to \$41.29/MWh for the next interval when the demand reduced by approximately 167 MW and 102 MW of non-scheduled generation came online. A total of 316 MW of generation capacity was also rebid from higher priced bands to bands priced at or below \$0/MWh.

The high 30-minute spot price for South Australia was not forecast in the pre-dispatch schedules, as it was a result of rebidding during the affected trading interval.

Sunday 16 August 2015 – High Energy price SA

Market Outcomes: South Australian spot price reached \$2,351.64/MWh for trading interval (TI) ending 1930 hrs.

South Australian FCAS prices and energy and FCAS prices for the other NEM regions were not affected by this event.

Detailed Analysis: 5-Minute dispatch price reached the Market Price Cap of \$13,800/MWh in South Australia for dispatch interval (DI) ending 1925 hrs. The high price can be attributed to rebidding of generation capacity and limited interconnector flow into South Australia.

The South Australian demand was 1,952 MW for TI ending 1930 hrs. During the high priced TI, wind generation in South Australia was 299 MW.

For DI ending 1925 hrs, AGL rebid 100 MW of generation capacity from Torrens Island B PS from bands priced at or below \$65/MWh to bands priced at \$13,800/MWh. South Australian generation capacity was offered at less than \$591/MWh or above \$10,759/MWh resulting in a steep supply curve. Cheaper priced generation was available but limited due to ramp rates (Northern PS unit 2) or required more than one DI to synchronise (Quarantine PS). Lake Bonney 2 and 3 wind farms were constrained down by a thermal constraint equation, $V \gg S_NIL_SETB_SGKH$. This constraint equation avoids overloading of the Snuggery-Keith 132 kV line for the contingent trip of one South East-Taillem Bend 275 kV line. Northern PS unit 1 which generally offers capacity up to 273 MW was also unavailable.

Generation offers at MPC had to be cleared from multiple South Australian units to meet the demand for the high priced DI.

During the affected DI, the target flow towards South Australia on the Heywood interconnector was constrained to 196 MW by the thermal constraint equation, $V \gg S_NIL_SETB_SGKH$. The target flow on the Murraylink interconnector was limited to 220 MW towards South Australia by the Victoria to South Australia upper transfer limit constraint equation, $VSML_220$.

The 5-minute price reduced to \$43.31/MWh in the subsequent DI to the high priced interval when the demand reduced by approximately 130 MW and 105 MW of non-scheduled generation came online. 46 MW of generation capacity was rebid from higher price bands to bands priced at or below \$301/MWh which also contributed to reducing the dispatch price.

The high 30-minute spot price for South Australia was not forecast in the pre-dispatch schedules, as it was a result of rebidding or withdrawal of generation capacity within the affected trading interval.



Monday 17 August 2015 – High Energy price SA

Market Outcomes: South Australian spot price reached \$2,289.21/MWh for trading interval (TI) ending 2030 hrs.

South Australian FCAS prices and energy and FCAS prices for the other NEM regions were not affected by this event.

Detailed Analysis: 5-Minute dispatch price reached \$13,500/MWh in South Australia for dispatch interval (DI) ending 2015 hrs. The high price can be attributed to rebidding of generation capacity.

The South Australian demand was 2,091 MW for TI ending 2030 hrs. During the high priced TI, wind generation in South Australia was 119 MW.

For DI ending 2015 hrs, AGL rebid 265 MW of generation capacity from Torrens Island PS from bands priced at below \$95/MWh to bands priced at or above \$13,500/MWh. Cheaper priced generation was available but limited due to ramp rates (Hallett PS), FCAS profile (Northern PS unit 2) or required more than one DI to synchronise (Quarantine PS). Northern PS unit 1 which generally offers capacity up to 273 MW was unavailable since 14 August 2015.

Generation offers at \$13,500/MWh had to be cleared from Torrens Island A PS unit 1 to meet the demand for the high priced DI.

During the affected DI, the target flow towards South Australia on the Heywood interconnector was constrained to 460 MW by the Victoria to South Australia Heywood upper transfer limit thermal constraint equation, $V > S_{460}$. The target flow on the Murraylink interconnector was limited up to 209 MW towards South Australia by a voltage stability constraint equation, $V^{SML_NSWRB_2}$. This constraint equation avoids voltage collapse in Victoria for loss of the Darlington Point to Buronga (X5) 220 kV line.

The 5-minute price reduced to \$38.03/MWh in the subsequent DI to the high priced interval when the demand reduced by approximately 110 MW and 97 MW of non-scheduled generation came online. 708 MW of generation capacity was rebid to market floor price of -\$1000/MWh which also contributed to reducing the dispatch price.

The high 30-minute spot price for South Australia was not forecast in the pre-dispatch schedules, as it was a result of rebidding or withdrawal of generation capacity within the affected trading interval.

Thursday 20 August 2015 – High Energy price QLD

Market Outcomes: Queensland spot price reached \$2,333.90/MWh for trading interval (TI) ending 0700 hrs.

Queensland Frequency Control Ancillary Services (FCAS) prices and energy and FCAS prices for the other NEM regions were not affected by this event.

Detailed Analysis: 5-Minute dispatch price reached the Market Price Cap (MPC) of \$13,800/MWh for dispatch interval (DI) ending 0700 hrs. The high price can be attributed to shifting and rebidding of generation capacity when interconnector flow was limited.



For DI ending 0635 hrs, CS Energy and Stanwell shifted a total of 470 MW of generation capacity from bands priced at below \$42/MWh to the MPC. Between DIs ending 0645 hrs and 0700 hrs, CS Energy and Millmerran rebid a total of 698 MW of generation capacity from bands priced at below \$17/MWh to either \$13,799.99/MWh or the MPC. Cheaper priced generation was available but limited due to ramp rates (Callide C), required more than one DI to synchronise (Braemar unit 7) and constrained off by thermal constraint equation $Q > \text{NIL_MRTA_A}$ (Oakey PS). The constraint equation limits Oakey PS to the emergency rating of the Middle Ridge to Tangkam 110 kV line.

During the affected DI, the target flow on the QNI interconnector towards Queensland was limited to 47 MW by an outage constraint equation, $N^{\wedge}Q_AR_VC_B1$. This constraint equation prevents voltage collapse in New South Wales for the loss of the Kogan Creek PS during the outage of the Armidale 330 kV SVC. The target flow on the Terranora interconnector towards Queensland was limited to 63 MW by constraint equations $N^{\wedge}Q_AR_VC_B1$ and $NQTE_ROC$. The later constraint equation limits the rate of change on the interconnector to 80 MW per 5 minutes.

The 5-minute price reduced to \$35.24/MWh in the subsequent DI to the high priced intervals when 1,962 MW of generation capacity was shifted from bands priced at above \$12,947/MWh to the lower priced bands.

The high 30-minute spot price for Queensland was not forecast in the pre-dispatch schedules, as it was a result of rebidding of generation capacity within the affected trading interval.

Thursday 27 August 2015 – High Energy price SA

Market Outcomes: South Australian spot price reached \$2337.31/MWh and \$1835.23/MWh for trading intervals (TIs) ending 0800 hrs and 0830 hrs respectively.

South Australian FCAS prices and energy and FCAS prices for the other NEM regions were not affected by this event.

Detailed Analysis: 5-Minute dispatch price in South Australia reached the Market Price Cap (MPC) of \$13,800/MWh and \$10759.20/MWh for dispatch intervals (DIs) ending 0735 hrs and 0810 hrs respectively. The high price can be attributed to reduced availability of cheaper priced generation during the morning peak demand, rebidding and the decrease of non-scheduled generation.

The South Australian demand averaged 1,848 MW between TIs ending 0800 hrs and 0830 hrs. For the same intervals, the wind generation in South Australia was low with an average of 133 MW.

During the high priced dispatch intervals, Northern PS unit 1 was starting up with a maximum availability of 12 MW after being offline since 15 August 2015. Northern PS unit 2 which generally offers capacity up to 273 MW was unavailable since DI ending 0430 hrs on 27 August 2015.

For DI ending 0735 hrs, cheaper priced generation was available but limited due to ramp rates (Hallet PS, Mintaro Gas GT), or required more than one DI to synchronise (Dry Creek unit 2). The target flow on the Heywood interconnector was limited to 435 MW towards South Australia by the thermal constraint equation, $V > S_NIL_HYTX_HYTX$. This system normal constraint equation manages post contingent flow on the Heywood 275/500 kV transformers by reducing the Heywood interconnector flow when the actual flow exceeds the pre-defined transformer rating. The target flow on the Murraylink interconnector was limited to 220 MW towards South Australia by the upper transfer limit constraint equation, $VSML_220$.



The 5-minute price reduced to \$44.70/MWh in the subsequent interval, DI ending 0740 hrs, when the demand was reduced by approximately 177 MW while 94 MW of non-scheduled generation came online. Also, a total of 225 MW of generation capacity was rebid from price bands higher than \$350/MWh to market floor price (MFP) of -\$1000/MWh which contributed to reducing the dispatch price.

Between DIs ending 0805 hrs and 0810 hrs, Synergen, Energy Australia and AGL shifted or rebid 225 MW of generation capacity from bands priced at MFP to bands priced at higher than \$10,759/MWh. Non-scheduled generation that had come online following the earlier high price had reduced their output from 108MW to 8 MW. Cheaper priced generation was available but limited due to FCAS profile (Torrens Island A unit 2) or constrained off by thermal constraint equation S>>NIL_TBTU_TBMO (Ladbroke PS, Lake Bonney WF and Snuggery PS unit 1).

The target flow on the Heywood interconnector was limited to 460 MW by the Victoria to South Australia Heywood upper transfer limit thermal constraint equation, V>S_460. The Heywood interconnector was also limited by the thermal constraint equation, S>>NIL_TBTU_TBMO. This constraint equation avoids overloading of the Tailem Bend-Mobilong 132 kV line for the contingent trip of the Tailem Bend-Tungkillo 275 kV line. The target flow on the Murraylink interconnector was limited up to 205 MW towards South Australia by a voltage stability constraint equation, V^SML_NSWRB_2. This constraint equation avoids voltage collapse in Victoria for loss of the Darlington Point to Buronga (X5) 220 kV line.

The 5-minute price reduced to \$47.14/MWh in the subsequent DI to the high priced interval when the demand was reduced by approximately 107 MW while 103 MW of non-scheduled generation came online. Also, a total of 725 MW of generation capacity was rebid from higher priced bands to MFP.

The high 30-minute spot price for South Australia for TI ending 0800 hrs was not forecast in the latest pre-dispatch schedule, as the forecast demand was approximately 46 MW lower in the pre-dispatch schedule.

The high 30-minute spot price for South Australia for TI ending 0830 hrs was forecast in the latest pre-dispatch schedule.

Saturday 29 August 2015 – High FCAS price TAS

Market Outcomes: Tasmanian Frequency Control Ancillary Service price (sum of all services) reached \$3,042.65/MWh for trading interval (TI) ending 0200 hrs.

Energy prices in Tasmania and Energy and FCAS prices in the other NEM regions were not affected.

Further information is provided below.

Detailed Analysis: The Fast Raise service price in Tasmania was at the market price cap (MPC) of \$13,800/MWh for dispatch interval (DI) ending 0145 hrs. The high price can be attributed to insufficient Fast Raise service available in Tasmania when the Basslink interconnector flow was in the no-go-zone (between -50 MW and +50 MW).

For DI ending 0145 hrs, a constraint equation F_T+NIL_WF_TG_R6 violated when there was insufficient Fast Raise services available in Tasmania to meet the increased requirement. This



constraint equation manages the Tasmanian Fast Raise requirement for the contingent trip of a Smithton-Woolnorth or Norwood-Scotsdale tee Derby line when the Basslink interconnector is unable to provide FCAS. Cheaper priced Fast Raise services were limited due to their FCAS offer profile.

The Fast Raise service price reduced to \$0.80/MWh for DI ending 0150 hrs when more cheaper priced Fast Raise service was available and the requirement decreased marginally.

The high FCAS price for Tasmania was not forecast in the pre-dispatch schedules, as the FCAS requirement can be sourced in all NEM regions, not just Tasmania. This is attributed to the no-go-zone not being modelled in pre-dispatch schedules.

Sunday 30 August 2015 – High Energy price SA

Market Outcomes: South Australian spot price reached \$2,288.47/MWh and \$1,846.35/MWh for TIs ending 1900 hrs and 1930 hrs respectively on 30 August 2015.

South Australian FCAS prices and energy and FCAS prices for the other NEM regions were not affected by this event.

Actual Lack of Reserve Level 1 (LOR1) condition had been declared for the South Australian region from 1900 hrs to 1930 hrs (Market Notices 49699 and 49704).

Detailed Analysis: 5-Minute dispatch prices in South Australia reached \$13,331.28 and \$10,759.20/MWh for dispatch intervals (DIs) ending 1840 hrs and 1920 hrs respectively. The high price can be attributed to generator tripping, decrease of non-scheduled generation and rebidding during the evening peak period.

The South Australian demand averaged 1,899 MW between TIs ending 1900 hrs and 1930 hrs. For the same intervals, the wind generation in South Australia was very low with an average of 58 MW.

Torrens Island B unit 4 tripped from approximately 200 MW at 1816 hrs. Northern PS unit 2 which generally offers capacity up to 273 MW was unavailable since DI ending 0430 hrs on 27 August 2015.

For DI ending 1840 hrs, the South Australian demand increased by 97 MW when non-scheduled generation decreased by 71 MW. Cheaper priced generation was available but limited due to ramp rates (Northern PS unit 1), or required more than one DI to synchronise (Dry Creek unit 3). The target flow on the Heywood interconnector was at 455 MW towards South Australia, which violated the limit of 435 MW set by the thermal constraint equation, $V > S_NIL_HYTX_HYTX$. This system normal constraint equation manages post contingent flow on the Heywood 275/500 kV transformers by reducing the Heywood interconnector flow when the actual flow exceeds the pre-defined transformer rating. The target flow on the Murraylink interconnector was limited to 214 MW towards South Australia by a voltage stability constraint equation, $V^{\wedge}SML_NSWRB_2$. This constraint equation avoids voltage collapse in Victoria for loss of the Darlington Point to Buronga (X5) 220 kV line.

The 5-minute price reduced to \$75.34/MWh in the subsequent interval, DI ending 1845 hrs, when the demand reduced by approximately 120 MW while 110 MW of non-scheduled generation came



online. Also, a total of 650 MW of generation capacity was rebid from higher priced bands to the market floor price (MFP) of -\$1,000/MWh.

For DI ending 1920 hrs, Synergen and Alinta rebid a total of 123 MW of generation capacity from the bands priced at lower than \$95/MWh to bands priced at above \$10,759/MWh. Cheaper priced generation from Dry Creek unit 2 was available but was limited due to ramp rates. The target flow on the Heywood interconnector was limited to 446 MW towards South Australia by constraint equation, V>S_NIL_HYTX_HYTX. The target flow on the Murraylink interconnector was limited to 220 MW towards South Australia by the upper transfer limit constraint equation, VSML_220.

The 5-minute price reduced to \$46.05/MWh in the subsequent interval, DI ending 1925 hrs, when the demand reduced by approximately 116 MW while 99 MW of non-scheduled generation came online. Also, a total of 270 MW of generation capacity was rebid from higher priced bands to the MFP.

The high 30-minute spot price for South Australia for TI ending 1900 hrs and 1930 hrs was not forecast in the latest pre-dispatch schedule as it was a result of a fluctuation of the 5-minute demand and rebidding of generation capacity within the affected trading interval.