

10 – 16 January 2016

Weekly summary

Figure 1 shows that average daily prices were higher in all markets than for the previous week. In part this was explained by an increase in the use of gas for gas powered generation (GPG), as shown in figure 5.1.

The smallest price increase occurred in Brisbane, where prices have generally been above \$5/GJ over January to date. Production at Roma and shipping on LNG pipelines remains high, with another cargo loading at the APLNG export terminal and additional shipments departing Gladstone for the GLNG and QCLNG projects during the week.

The largest average price increases occurred in Victoria and Adelaide, increasing by 41 and 51 percent respectively. Figure 3.1 shows ex ante prices in Adelaide were above \$6/GJ for from Monday to Sunday inclusive.

Long term statistics and explanatory material

The AER has published an [explanatory note](#) to assist with interpreting the data presented in its weekly gas market reports. The AER also publish a range of [longer term statistics](#) on the performance of the gas sector including gas prices, production, pipeline flows and consumer demand.

Market overview

Figure 1 sets out the average daily prices (\$/GJ) in the Victorian Declared Wholesale Market (**VGM or Victorian gas market**) and for the Sydney (**SYD**), Adelaide (**ADL**) and Brisbane (**BRI**) Short Term Trading Market hubs (**STTM**) for the current week compared to historical averages.

Figure 1: Average daily prices – all markets (\$/GJ)¹

Region	Victoria	Sydney	Adelaide	Brisbane
10 Jan - 16 Jan 2016	4.10	4.86	6.86	5.89
% change from previous week	41	18	51	13
15-16 financial YTD	4.40	4.65	5.13	3.83
% change from previous financial YTD	26	46	43	84

Figure 2 compares average weekly gas prices, ancillary market payments and scheduled injections against historical averages for the Victorian gas market.

¹ The weighted average daily imbalance price applies for Victoria.

Figure 2: Victorian Gas Market

	Price (\$/GJ)	Ancillary payments (\$000)*	BOD forecast demand quantity (TJ)
10 Jan - 16 Jan 2016	4.10	-	343
% change from previous week	41	-	14
15-16 financial YTD	4.40	-	606
% change from previous financial YTD	26	-	7

* Note: only positive ancillary payments, reflecting system constraints will be shown here.

More detailed analysis on the VGM is provided in section 1.

Figures 3 to 5 show average ex ante and ex post gas prices, Market Operator Service (**MOS**) balancing gas service payments together with the related daily demand quantities against historical averages for the Sydney, Adelaide and Brisbane STTM hubs, respectively.

Figure 3: Sydney STTM

	Ex ante price (\$/GJ)	Ex post price (\$/GJ)	MOS payments (\$000)	Ex ante quantity (TJ)	Ex post quantity (TJ)
10 Jan - 16 Jan 2016	4.86	3.72	172.45	245	224
% change from previous week	18	-1	402	17	14
15-16 financial YTD	4.65	4.35	29.88	239	234
% change from previous financial YTD	46	35	112	-6	-9

Figure 4: Adelaide STTM

	Ex ante price (\$/GJ)	Ex post price (\$/GJ)	MOS payments (\$000)	Ex ante quantity (TJ)	Ex post quantity (TJ)
10 Jan - 16 Jan 2016	6.86	6.65	4.16	45	42
% change from previous week	51	67	-30	8	12
15-16 financial YTD	5.13	5.25	8.71	65	66
% change from previous financial YTD	43	48	-32	0	2

Figure 5: Brisbane STTM

	Ex ante price (\$/GJ)	Ex post price (\$/GJ)	MOS payments (\$000)	Ex ante quantity (TJ)	Ex post quantity (TJ)
10 Jan - 16 Jan 2016	5.89	6.46	2.79	80	83
% change from previous week	13	18	9	2	2
15-16 financial YTD	3.83	3.82	1.58	88	88
% change from previous financial YTD	84	102	14	-40	-40

More detailed analysis of the STTM hubs is found in sections 2 to 4.

Section 5 provides analysis on production and pipeline flows on the National Gas Bulletin Board (**Bulletin Board**), as well as gas powered generation (**GPG**) volumes in each state, and section 6 provides information on the Gas Supply Hub (**GSH**) at Wallumbilla.

Detailed market analysis

Contingency gas event in Sydney on 13 January

Figure 2.4 shows there were several large MOS requirements in Sydney this week. On 13 January, there was a requirement for overrun MOS when the decrease requirement reached around 40 TJ in the hub. Overrun MOS quantities are allocations of MOS required when the quantity of a given service in the monthly MOS offer stack has been exhausted. The 38 TJ of decrease MOS offered on the Moomba to Sydney Pipeline was insufficient to cover the requirement in the hub on 13 January, leading to 2.4 TJ of MOS being allocated as overrun. As a result, service payments reached \$586 003 for that gas day.

Large decrease requirements also led to significant service payments for the 10, 11, 14 and 16 January gas days of \$245 725, \$137 730, \$89 371 and \$101 981 respectively. The large decrease requirements occurred as a result of high levels of over forecast hub demand.

On 13 January, compression problems on the Eastern Gas Pipeline meant there was the potential for a 30 TJ shortfall in supply to the hub. The problem was expected to continue into the 14 January gas day. As a result AEMO advised the market that a CG event had been triggered, as required under the Gas Rules. However subsequent consultations between AEMO, facility operators and market participants alleviated the potential supply shortage, removing the requirement for contingency gas. In response to the potential shortfall, participants renominated supply into Sydney from the Eastern Gas Pipeline (EGP) to the Moomba to Sydney Pipeline (MSP).

Jemena notified the wider market of potential curtailment on the EGP via Linepack Capacity Adequacy flag alerts on the Bulletin Board. A RED flag² was raised for 13 January and an AMBER flag³ was raised for 14 January.

The actual renominations on the day resulted in an excess of net supply to the hub of 13.5 TJ above forecast levels. This, combined with demand in the hub being over forecast by around 26 TJ, resulted in the significant MOS decrease requirement on the day.

² A RED LCA flag indicates involuntary load shedding of 'firm' load is likely or happening on the gas day. CG was not scheduled on this day in the Sydney hub following participants renominating supply to the Moomba to Sydney Pipeline.

³ An AMBER LCA flag indicates voluntary/contractual load shedding of interruptible gas customers is likely or happening on the gas day.

Significant Price Event - Sydney STTM hub 13 January 2016

On Wednesday 13 January, decrease MOS requirements in Sydney reached 40 TJ, leading to a service cost of \$586 003. Under Rule 498 of the Gas Rules, the AER is required to identify and report on any significant price variations (SPVs) in the STTM. In the case of MOS, this is the case when the service cost exceeds \$250 000. In accordance with the Gas Rules, we will publish a separate detailed report into the events leading to the high MOS service cost on 13 January.

Gas Powered Generation and gas market prices

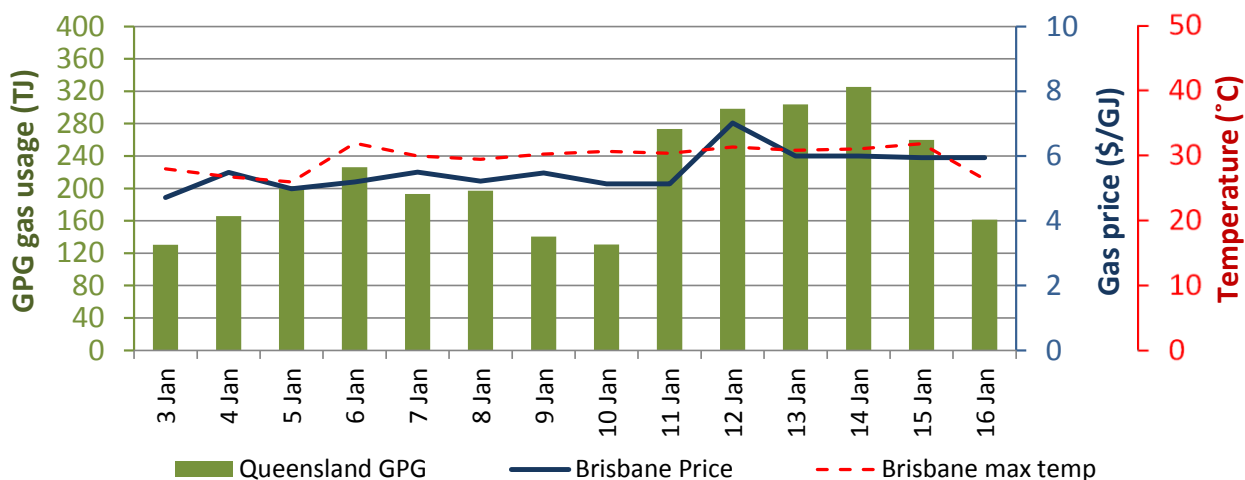
Figure 6 shows that maximum daily temperatures in Queensland were consistently around 30 degrees this week, and gas usage for electricity generation on weekdays ranged between 260 TJ and 325 TJ.⁴ The price in Queensland reached a maximum of \$7.02/GJ on Tuesday 12 January.⁵ Demand in the hub on this day was under forecast, leading to a higher ex post prices (see figure 4.1) and MOS requirements in excess of 5 TJ (see figure 4.4).

Figure 7 shows that electricity generation gas usage in Sydney was above 145 TJ over 4 days, reaching a maximum of around 200 TJ on Wednesday 13 January.⁶

In Adelaide maximum daily temperatures were high, reaching about 38 degrees over three days mid-week. As shown in figure 8, this drove higher GPG demand, increasing to around 250 TJ on 12 January as gas prices in Adelaide reached a maximum of \$9.50/GJ.⁷ Ex ante prices reduced below D-2 provisional prices for the following two days, and GPG output began to fall from 13 January.

Figure 9 shows that gas demand for electricity generation in Victoria increased significantly over three days from 11 January. Temperatures in the region exceeded 36 degrees and 42 degrees on 11 and 13 January respectively.⁸ Demand remained high for 12 January despite cooler temperatures, as gas usage at a number of GPGs increased above forecast levels during the afternoon. Gas schedule prices in Victoria fell to zero from a beginning of day price of only \$1.50/GJ (see figure 1.1).

Figure 6: Gas powered generation, gas prices and temperature in Brisbane



⁴ Temperatures in Brisbane were consistently around 30 degrees this week. Gas usage estimates use the same methodology as that shown in figure 5.1.

⁵ Three GPGs in Queensland increased output above forecast levels on 12 January.

⁶ The temperature climbed above 31 degrees on 13 January and remained high over the remainder of the week. Electricity generation at the end of the week declined, despite temperatures in the region reaching close to 40 degrees on Saturday.

⁷ Prices on 11, 12 and 13 January were \$8/GJ or higher. Rebidding on 11 and 12 January led to higher ex ante prices, with higher forecast demand and significantly less gas offered below \$6-\$8/GJ compared to provisional schedules for those gas days.

⁸ GPG usage levels ranged from 130 TJ on 12 January up to 183 TJ on 13 January.

Figure 7: Gas powered generation, gas prices and temperature in Sydney

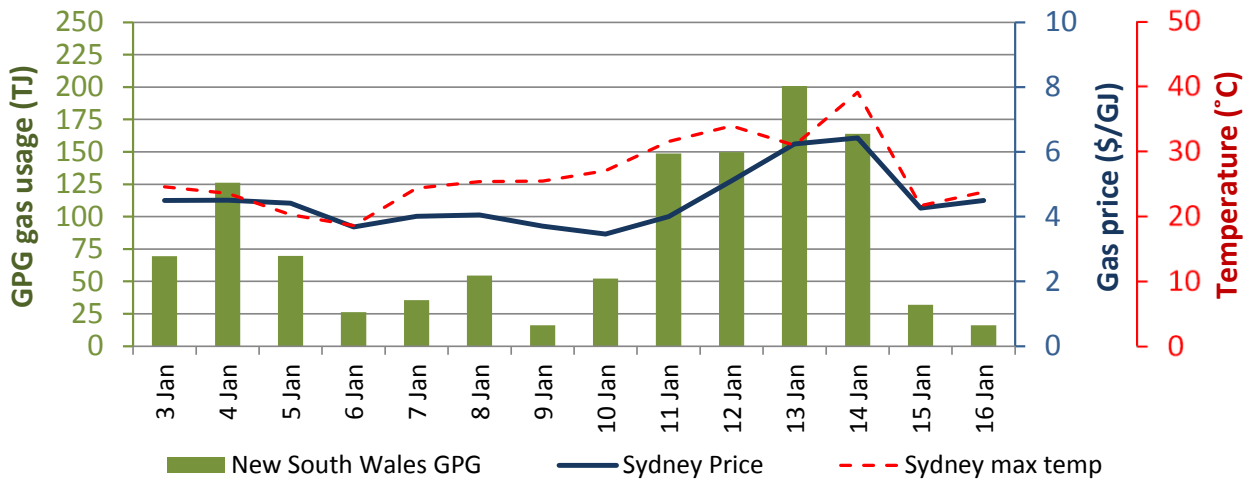


Figure 8: Gas powered generation, gas prices and temperature in Adelaide

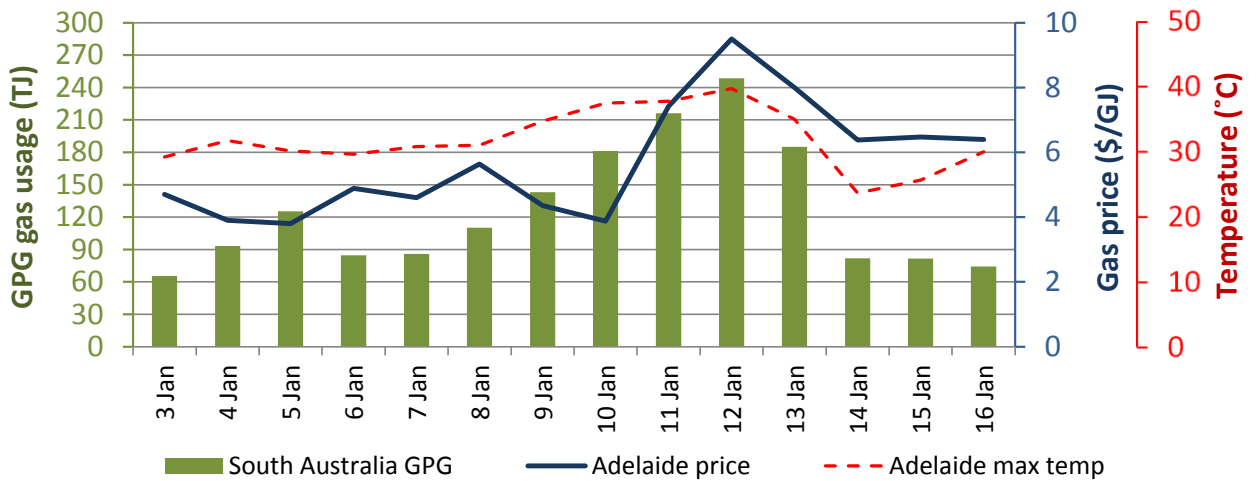
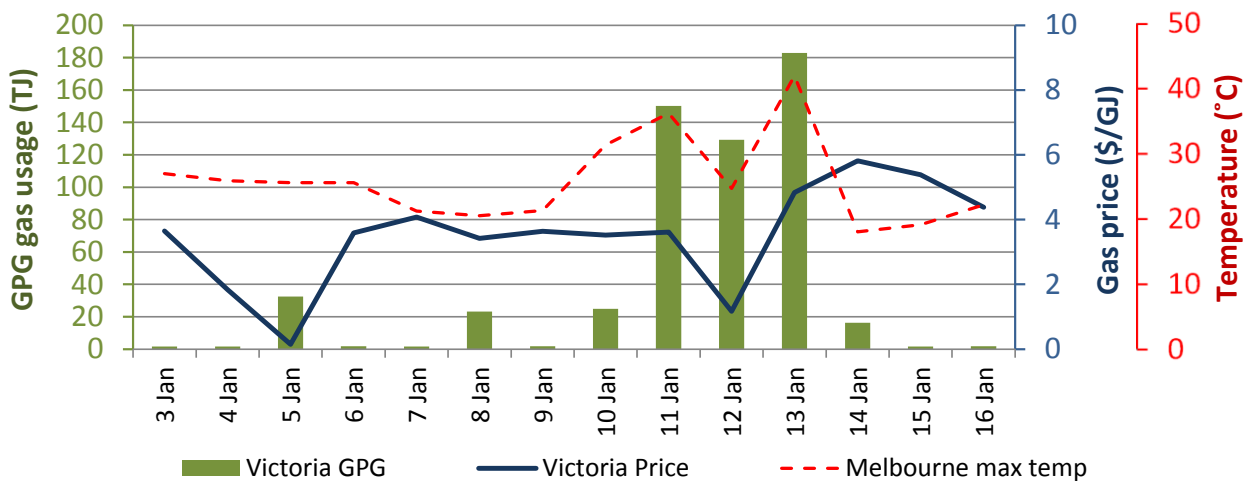


Figure 9: Gas powered generation, gas prices and temperature in Victoria



10 – 16 January 2016

1. Victorian Declared Wholesale Market

In the Victorian gas market, gas is priced five times daily at 6 am, 10 am, 2 pm, 6 pm and 10 pm. The imbalance weighted price on a gas day tends towards the 6 am price⁹ which is the schedule at which most gas is traded.

The main drivers¹⁰ of price are demand forecasts and bids to inject or withdraw gas from the market. Figures 1.1 to 1.4 below show the daily prices, demand forecasts¹¹, and injection/withdrawal bids for each of the five pricing schedules. Figure 1.5 provides information on which system injection points were used to deliver gas, in turn indicating the location and relative quantity of gas injection bids cleared through the market.

Figure 1.1: Prices by schedule

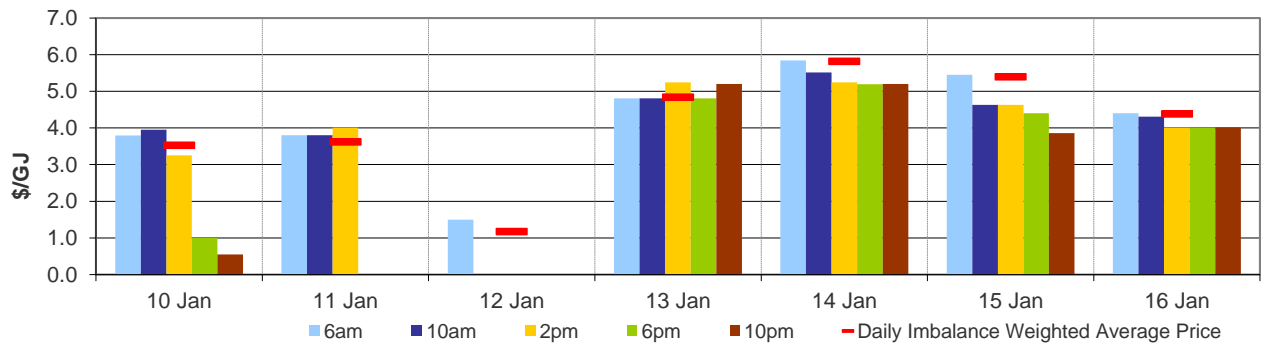
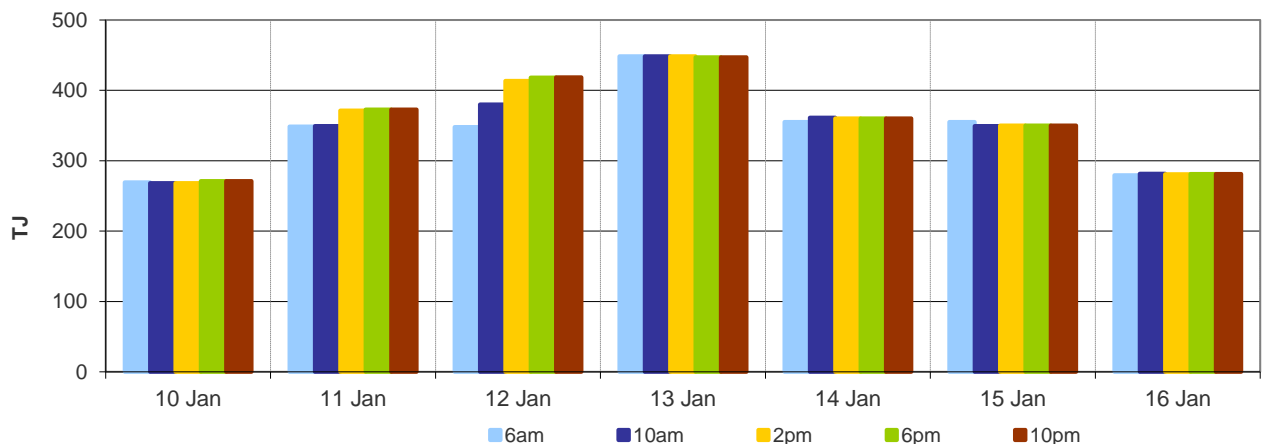


Figure 1.2: Demand forecasts



⁹ Prices for subsequent schedules are applied only to the differences in scheduled quantities (imbalances) to calculate the weighted price. The 6 am price applies to the entire scheduled quantity in the initial schedule.

¹⁰ The price might also be affected by transmission or production (contractual) constraints limiting how much gas can be delivered from a locale or System Injection Point (SIP) from time to time.

¹¹ These are Market Participants' aggregate demand forecasts adjusted for any override as applied by AEMO from time to time. These forecasts must be scheduled and cannot respond to price like withdrawal bids.

Figure 1.3: Injection bids by price bands

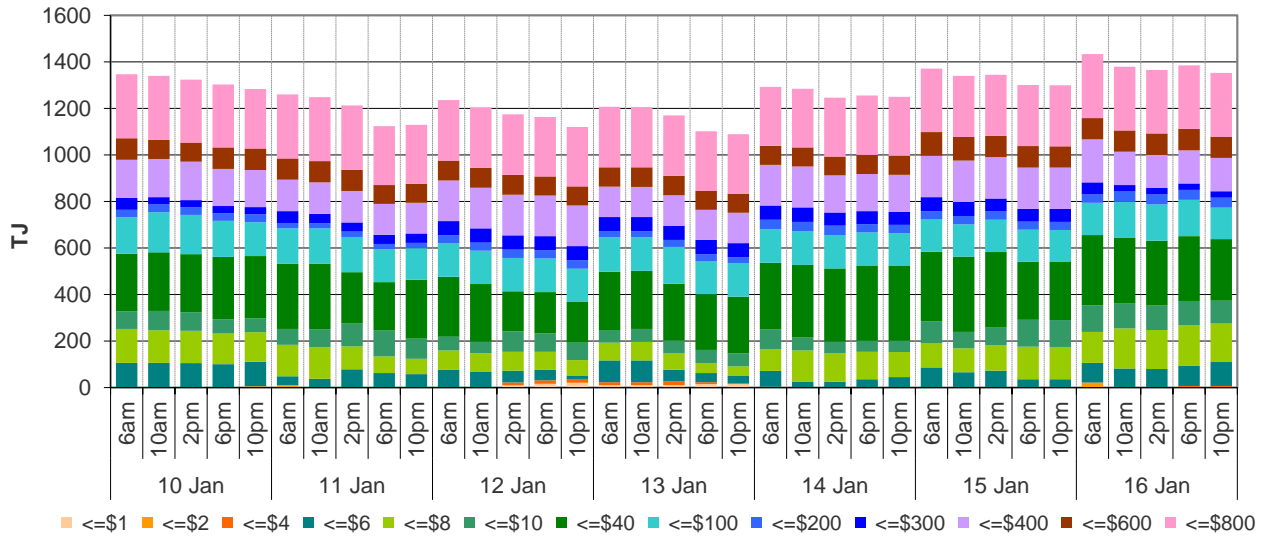


Figure 1.4: Withdrawal bids by price bands

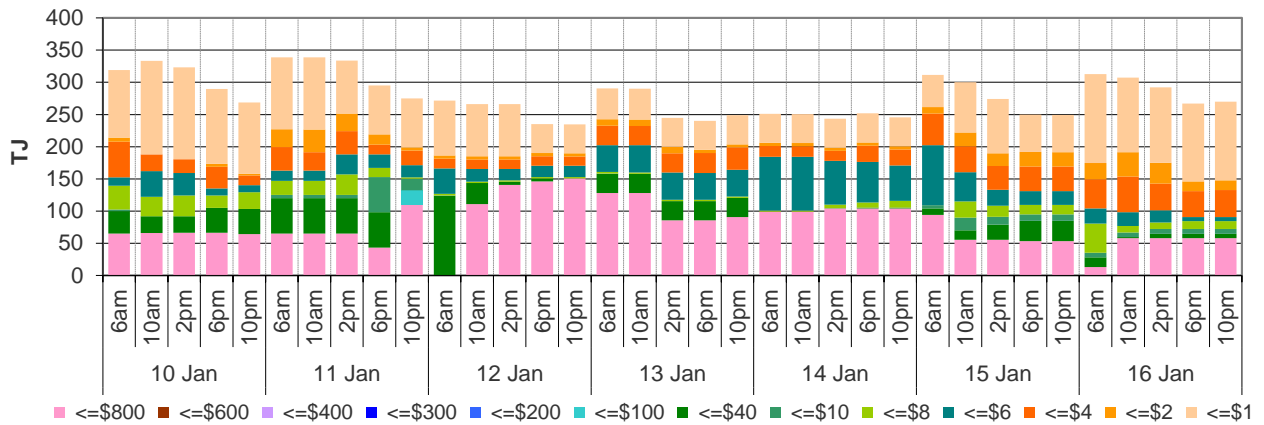
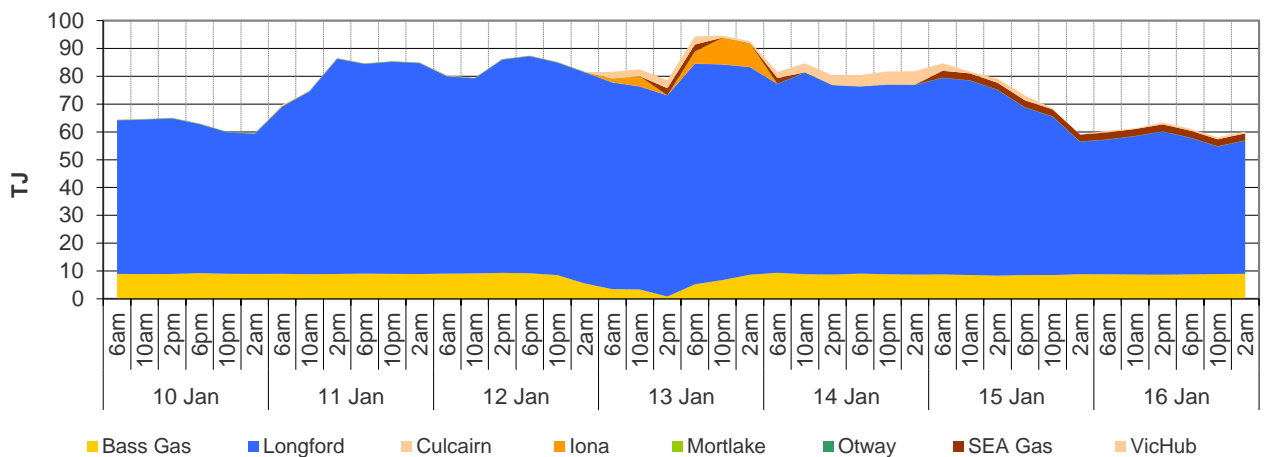


Figure 1.5: Metered Injections by System Injection Point



Note that in figure 1.5, the last 8-hour schedule from 10 pm has been separated into two 4-hour blocks to provide a consistent comparison with earlier scheduled injection volumes.

2. Sydney STTM

In each STTM hub, a daily gas price is calculated before the gas day (the ex ante price) and after the gas day (the ex post price). The main drivers of these prices are participant demand forecasts, and offers to inject or bids to withdraw gas traded at the hub.¹² Divergences in ex ante and ex post prices for a gas day may occur due to differences in scheduled (forecast) and allocated (actual) quantities. Pipeline acronyms are defined in the [user guide](#).

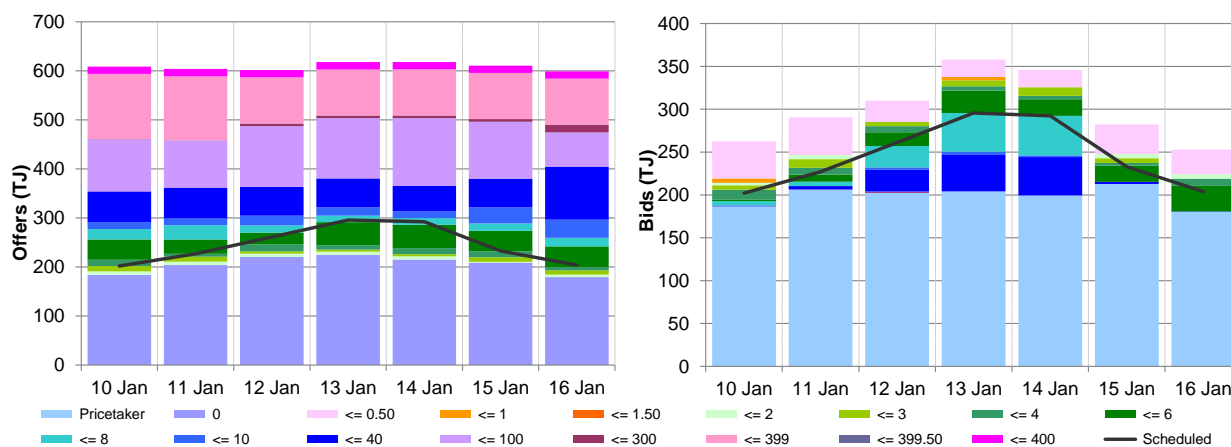
Market Operator Service balancing gas (MOS) payments arise because the amount of gas nominated on pipelines for delivery on a gas day will either exceed or fall short, by some amount, of the amount of gas consumed in the hub. In such circumstances, MOS payments are made to participants for providing a service to park gas on a pipeline or to loan gas from a pipeline to the hub.¹³

Figures 2.1 and 2.2 show daily prices, demand, offers and bids. Figures 2.3 and 2.4 show gas scheduled and allocated on pipelines to supply the hub, indicating the location and relative quantity of gas offers across pipelines and also the amount of MOS allocated for each pipeline.

Figure 2.1: SYD STTM daily ex ante and ex post prices and quantities

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ex ante price (\$/GJ)	3.46	4.00	5.10	6.24	6.43	4.27	4.50
Ex ante quantity (TJ)	202	227	261	296	292	233	204
Ex post price (\$/GJ)	1.00	2.50	5.10	5.23	5.10	3.54	3.54
Ex post quantity (TJ)	169	199	262	268	258	229	184

Figure 2.2: SYD daily hub offers and daily hub bids in price bands (\$/GJ)



¹² The main driver of the amount of gas scheduled on a gas day is the 'price-taker' bid, which is forecast hub demand that cannot respond to price and which must be delivered, regardless of the price.

¹³ MOS service payments involve a payment for a MOS increase service when the actual quantity delivered exceeds final gas nominations for delivery to a hub, and a payment for a MOS decrease service when the actual quantity delivered is less than final nominations. As well as a MOS 'service' payment, as shown in figure 2.4, MOS providers are paid for or pay for the quantity of MOS sold into the market or bought from the market (MOS 'commodity' payments/charges).

Figure 2.3: SYD net scheduled and allocated gas hub supply (excluding MOS)

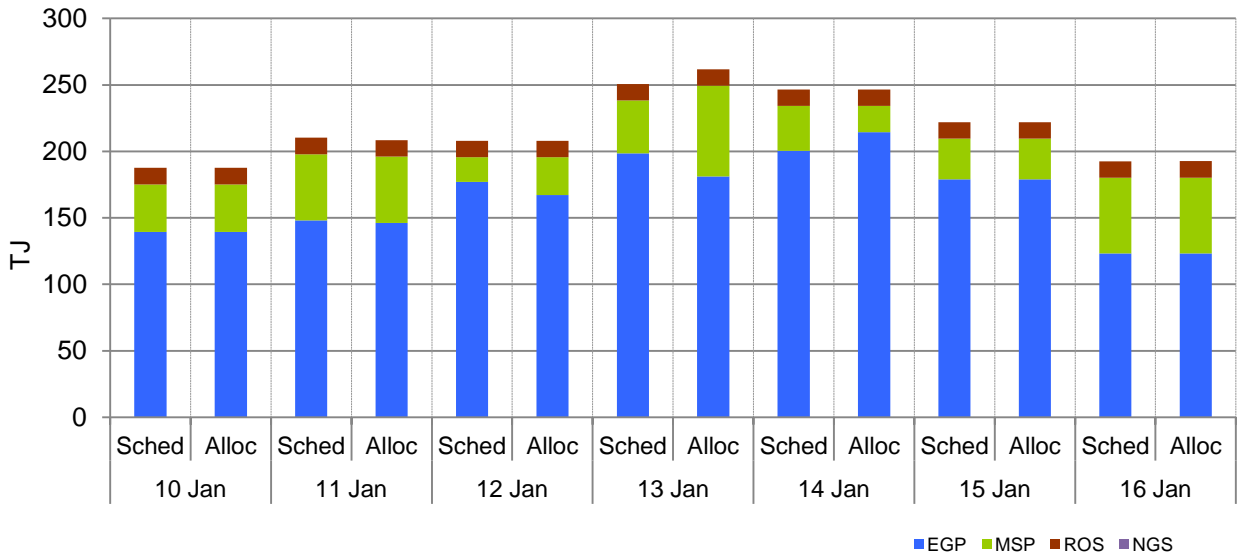
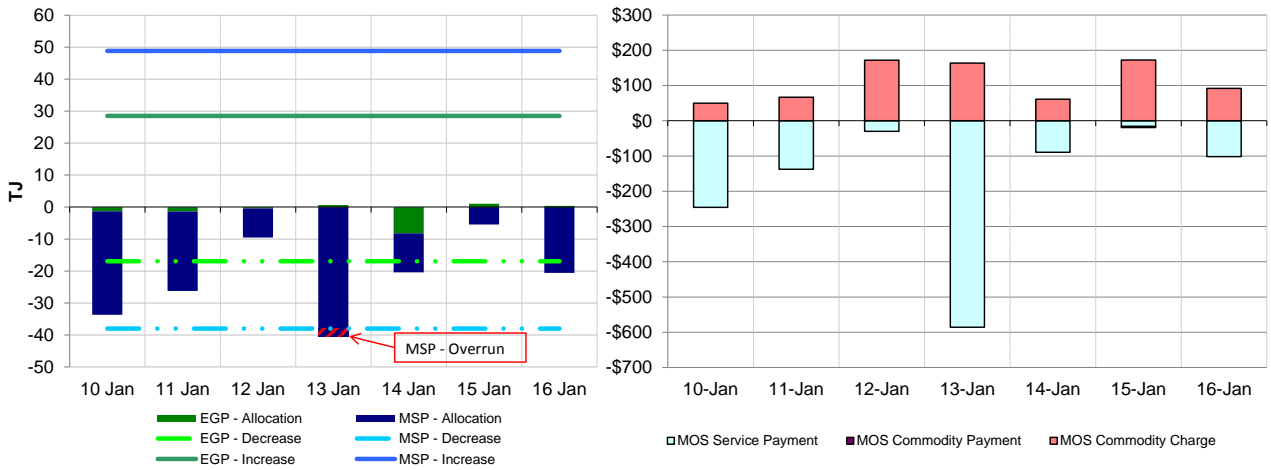


Figure 2.4: SYD MOS allocations (TJ), service payments and commodity payments/charges (\$000)



3. Adelaide STTM

The Adelaide STTM hub functions in the same way as the Sydney STTM hub. The same data that was presented for the Sydney hub is presented for the Adelaide hub in the figures below.

Figure 3.1: ADL STTM daily ex ante and ex post prices and quantities

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ex ante price (\$/GJ)	3.88	7.43	9.50	8.00	6.38	6.47	6.40
Ex ante quantity (TJ)	36	44	49	51	49	48	38
Ex post price (\$/GJ)	3.10	7.30	9.50	6.94	6.95	6.35	6.40
Ex post quantity (TJ)	25	41	49	47	51	45	38

Figure 3.2: ADL daily hub offers and daily hub bids in price bands (\$/GJ)

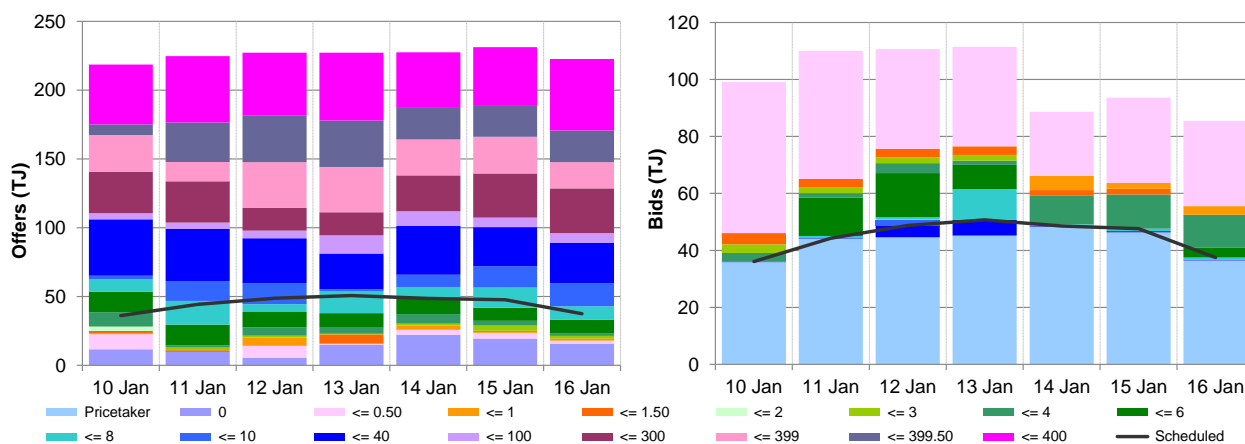


Figure 3.3: ADL net scheduled and allocated gas hub supply (excluding MOS)

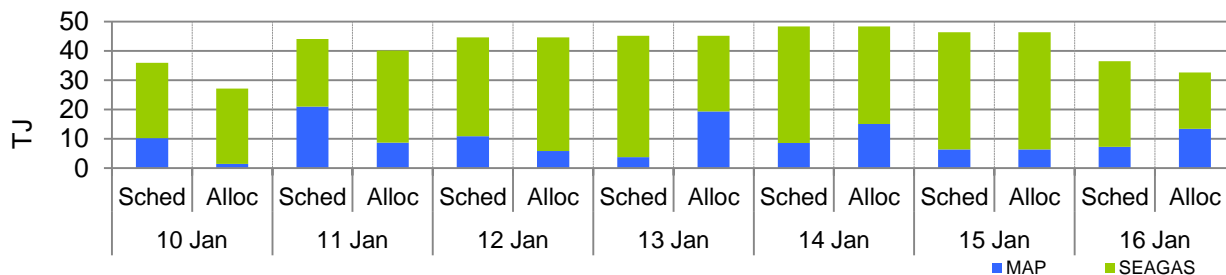
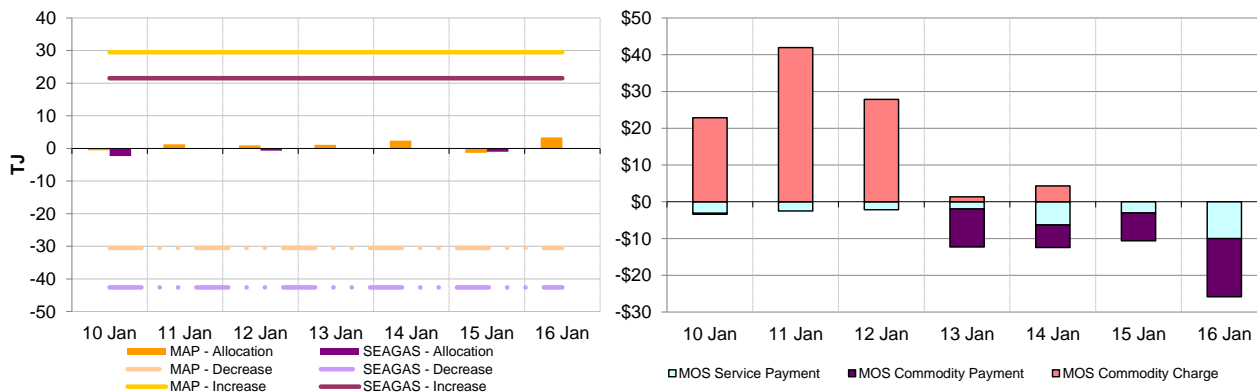


Figure 3.4: ADL MOS allocations (TJ), service payments and commodity payments/charges (\$000)



4. Brisbane STTM

The Brisbane STTM hub functions in the same way as the Sydney STTM hub. The same data that was presented for the Sydney hub is presented for the Brisbane hub in the figures below.

Figure 4.1: BRI STTM daily ex ante and ex post prices and quantities

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ex ante price (\$/GJ)	5.14	5.14	7.02	6.00	6.00	5.95	5.95
Ex ante quantity (TJ)	72	84	84	87	84	78	69
Ex post price (\$/GJ)	6.05	6.94	8.19	6.00	6.05	6.00	5.99
Ex post quantity (TJ)	74	88	90	86	87	82	72

Figure 4.2: BRI daily hub offers and daily hub bids in price bands (\$/GJ)

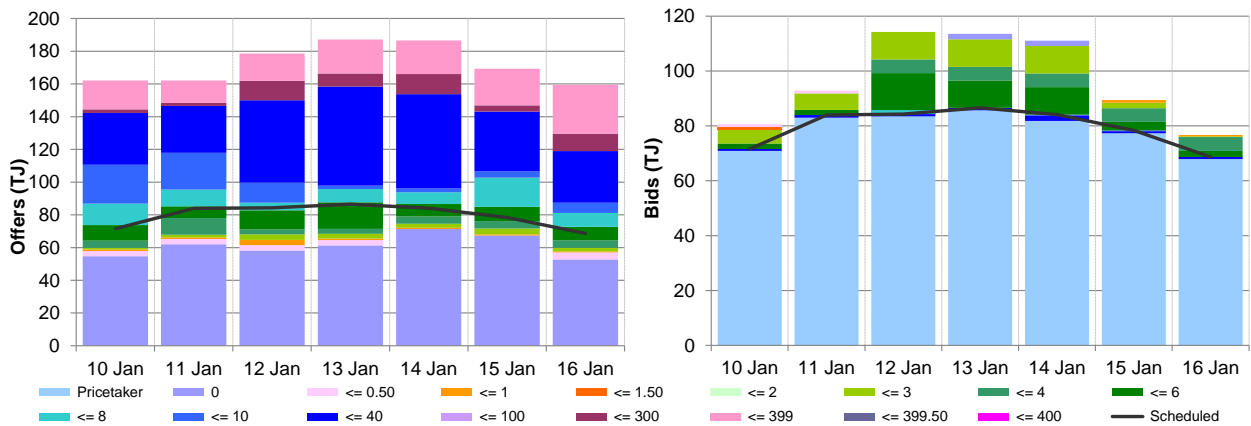


Figure 4.3: BRI net scheduled and allocated gas hub supply (excluding MOS)

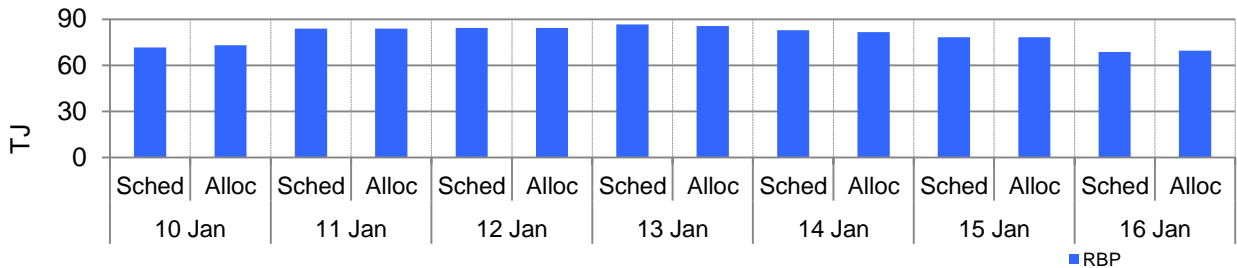


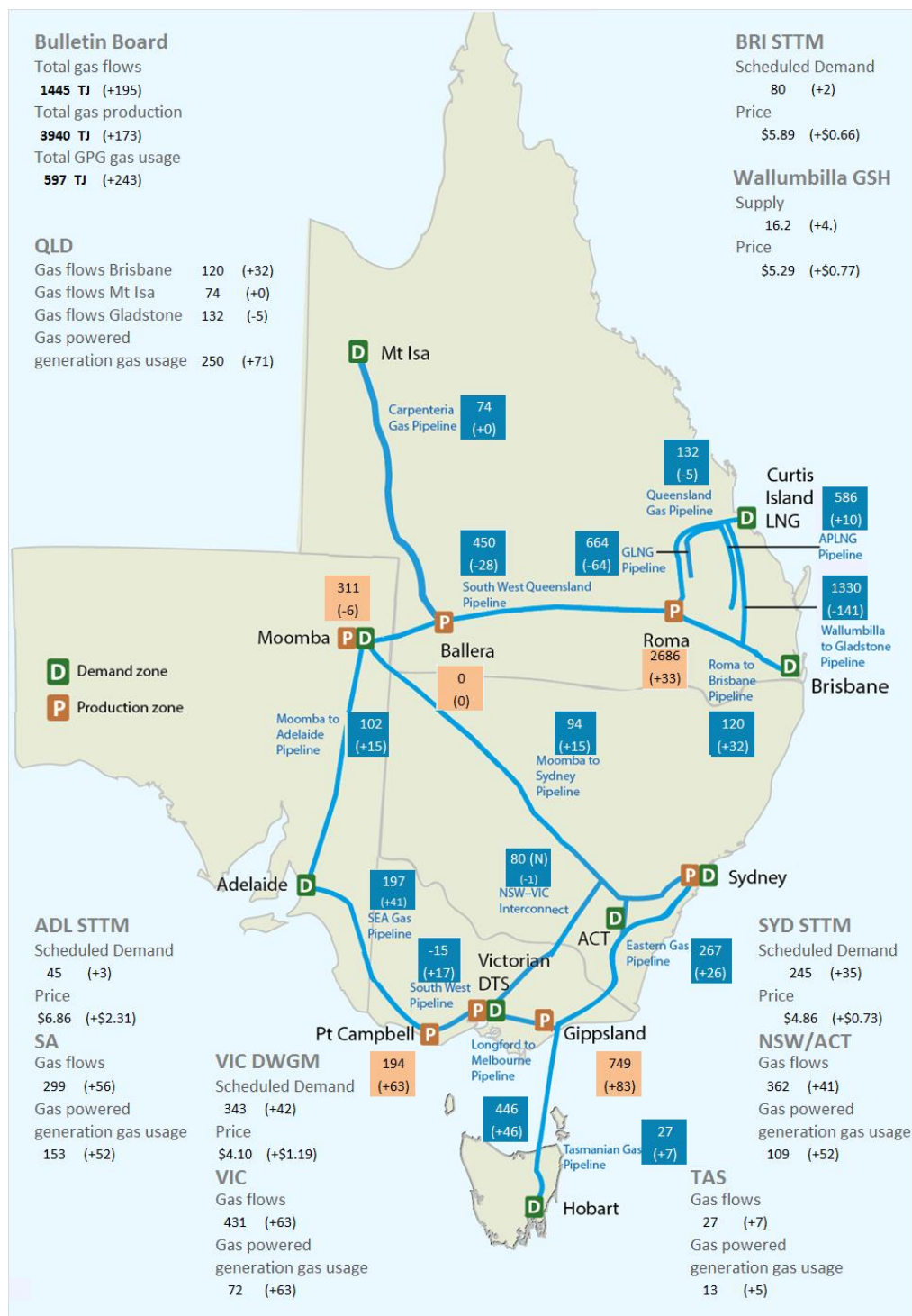
Figure 4.4: BRI MOS allocations (TJ), service payments and commodity payments/charges (\$000)



5. National Gas Bulletin Board

Figure 5.1 shows average daily actual flows for the current week¹⁴ from the Bulletin Board (changes from the previous week's average are shown in brackets). Average daily scheduled volumes and prices¹⁵ are provided for gas markets and gas powered generation for each region.

Figure 5.1: Gas market data (\$/GJ, TJ/day); Production, Consumption and Pipeline flows (TJ)



¹⁴ Gas flows shown under regional headings: **SA** = MAP + SEAGAS, **VIC** = SWP + LMP – negative(NSW-VIC), **NSW/ACT** = EGP + MSP, **TAS** = TGP, **QLD (Brisbane)** = RBP, **QLD (Mt Isa)** = CGP, **QLD (Gladstone)** = QGP
 GPG volumes may include gas usage that does not show up on Bulletin Board pipeline flows.

¹⁵ Roma included export LNG production from October 2014 and LNG pipeline flows are shown from October 2015. Wallumbilla supply is the average daily volume of gas 'traded', while price is a volume weighted average.

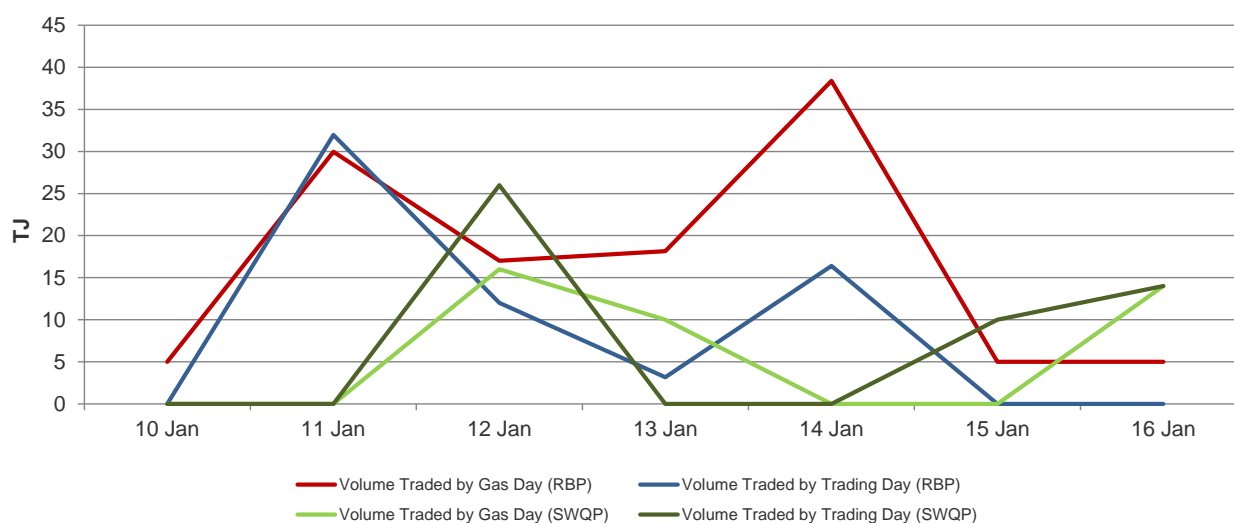
6. Gas Supply Hub

The Gas Supply Hub (**GSH**) was established for the trading of gas at Wallumbilla because it is located in close proximity to significant gas supply sources and demand locations and is a major transit point between Queensland and the gas markets on Australia’s east coast. The GSH is a voluntary market¹⁶ for the supply of gas traded between separate participants, with products listed for sale and purchase at delivery points on three major connecting pipelines at Wallumbilla – the Queensland Gas Pipeline (**QGP**), the South West Queensland Pipeline (**SWQP**) and the Roma to Brisbane Pipeline (**RBP**). There are separate products for each pipeline (each pipeline is considered a trading location, and each has a number of delivery points) and delivery period (daily, day-ahead, balance-of-day and weekly).

There were 19 trades this week for 113.5 TJ of gas at a volume weighted price of \$5.29/GJ, 63.5 TJ was traded on the RBP at an average of \$5.53/GJ and 50 TJ on SWQP at \$4.98/GJ. There were no weekly product trades.

Figure 6.1 shows volumes traded¹⁷ on each gas day and trading day for the current week.

Figure 6.1: Volume Traded (by Gas Day and by Trading Day)



¹⁶ Market trade is facilitated through an electronic trading platform, with standardised terms and conditions and a market settlement facility for the short-term trading of physical gas and related products. The market is designed to complement existing bilateral gas supply arrangements and gas transportation agreements, through the placement of anonymous offers (to sell) or bids (to buy) at specified quantity and price increments, which are automatically matched on the exchange to form transactions.

¹⁷ Volumes shown for weekly products include the ‘daily’ volume for each relevant ‘gas day’, and the ‘weekly’ volume for each relevant ‘trading day’.