Gas Market Report

AUSTRALIAN ENERGY REGULATOR

31 May – 6 June 2020

Weekly Summary

Prices ranged between $3.44-$5.52/GJ over the week. Demand increased across all markets this week. Prices in Brisbane fell from the previous week to their lowest levels this year, averaging just over $3.50/GJ. Similarly, Wallumbilla supply hub prices were also around $3.50/GJ, ranging from $2.90/GJ to $4.20/GJ. Average prices remained steady in Victoria and Adelaide, while prices increased slightly in Sydney following a fall over the previous week.

Gas Power Generation remained high across the east coast following a significant increase in mid-May.

Gas production was strong in QLD, averaging 4,100 TJ per day output from fields in the Roma region. This comes as the Wolleebee Creek production facility returned to service from mid-May. Overall, gas production increased by 135 TJ/day from the previous week.

MOS service payments in Sydney exceeded $58,000 on two occasions at the end of the week. On 5 May, the main contribution to MOS increase requirements was around 10 TJ of under forecast demand in the hub. On 6 May, over forecast hub demand drove net decrease requirements of around 12 TJ. Counter-acting MOS allocations on both days also contributed to the higher costs.[1]

On 1 June, AEMO identified a threat to system security affecting total system demand in the Victorian gas market from 6 pm due to a combination of high demand and a number of issues across the transmission system. It directed 34 TJ of LNG injections at Dandenong, with only about 29 TJ ultimately needed. This resulted in about $151,000 in ancillary payments for the gas day, but did not have a significant impact on gas prices.

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) for the current week, and demand levels, compared to historical averages. Regions shown include 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)**.

[1] Increase MOS allocations on the Eastern Gas Pipeline coinciding with decrease MOS allocations on the Moomba to Sydney Pipeline.

Figure 1: Average daily prices and demand – all markets ($/GJ, TJ)[2]

	Victoria		Sydney		Adelaide		Brisbane	
	Price	Demand	Price	Demand	Price	Demand	Price	Demand
31 May - 06 Jun 2020	4.95	873	4.61	314	5.52	76	3.52	115
% change from previous week	0	12	8	3	0	9	-11	14
19-20 financial YTD	6.73	567	6.66	239	7.26	56	5.95	90
% change from previous financial YTD	-31	7	-33	-3	-28	-2	-37	2

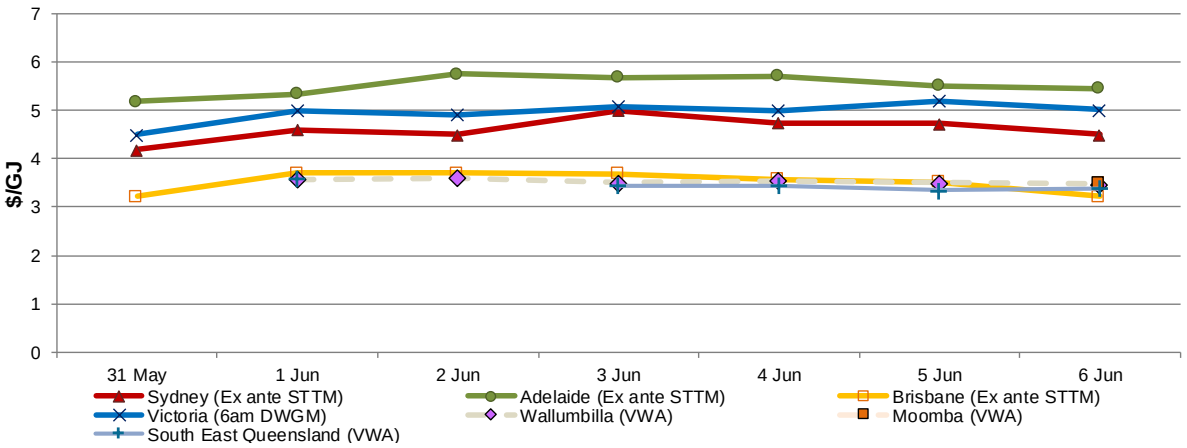
Figure 2 sets out price and demand information for the voluntary Wallumbilla and Moomba Gas Supply Hubs **(GSH)**.

Figure 2: Average prices and total quantity – Gas supply hub ($/GJ, TJ)[3]

	Moomba		South East Queensland		Wallumbilla	
	Price	Quantity	Price	Quantity	Price	Quantity
31 May - 06 Jun 2020	3.50	14	3.44	70	3.52	119
% change from previous week	-	-	-9	-10	-7	-80
19-20 financial YTD	6.87	529	5.79	7590	6.19	14643
% change from previous financial YTD	-28	-39	-38	-31	-33	48

Figure 3 illustrates the daily prices in each gas market, as defined in figures 1 and 2.

Figure 3: Daily gas market prices ($/GJ)



2 Average daily quantities are displayed for each region. The weighted average daily imbalance price applies for Victoria.

3 The prices shown for the GSH in Moomba, South East Queensland and Wallumbilla are volume weighted average (VWA) prices for all products traded across the period. The total quantity contributing to the weighted price is displayed for these GSH. Reported values for Moomba are the aggregate of trades on the Moomba to Adelaide Pipeline (MAP) and the Moomba to Sydney Pipeline (MSP). Historic trades for RBP and SWQP are grouped under WAL, (including in-pipe trades on the RBP).

Figure 4 compares average ancillary market payments (VGM) and balancing gas service payments (STTM) against historical averages.

Figure 4: Average daily ancillary payments ($000)

	Victoria Ancillary Payments*	Sydney MOS	Adelaide MOS	Brisbane MOS
31 May - 06 Jun 2020	21.61	38.77	2.61	1.24
% change from previous week	-	84	-22	-37
19-20 financial YTD		20.92	4.00	1.58
% change from previous financial YTD		7	-9	-1

* Ancillary payments reflect the compensation costs for any additional injections offered at a price higher than the market price. Note: only positive ancillary payments, reflecting system constraints will be shown here.

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

Figure 5 shows the quantity and volume weighted prices of products traded in the Gas Supply Hub locations at Moomba, South East Queensland and Wallumbilla.

Figure 5: Gas supply hub products total traded for the current week ($/GJ, TJ)

	Moomba		South East Queensland		Wallumbilla*	
	VWA price	Quantity	VWA price	Quantity	VWA price	Quantity
Balance of day	-	-	3.42	21.0	3.55	49.5
Daily	-	-	3.43	8.0	3.53	15.0
Day ahead	3.50	14.0	3.44	13.0	3.52	40.6
Weekly	-	-	3.45	28.0	3.45	14.0
Monthly	-	-	-	-	-	-
Total	**3.50**	**14.0**	**3.44**	**70.0**	**3.52**	**119.1**

* includes non-netted (off-market) trades.

Figure 6 shows Bulletin Board pipeline flows for the three LNG export pipeline facilities and the production output at related production facilities in the Roma region.

Figure 6: Average daily LNG export pipeline and production flows (TJ)*

	APLNG	GLNG	QCLNG	Total
Production	1446	933	1832	4211
Export Pipeline Flows	1021	1052	1397	3470
% change from previous week (pipeline flows)	6	2	-1	2
19-20 financial YTD Flows	1443	928	1282	3653

* Production quantities represent flows from facilities operated by APLNG, Santos and QGC. Gas from individual facilities may also supply the domestic market, other LNG projects or storage facilities.

Detailed market analysis

Victorian gas market threat to system security

On 1 June, Victoria experienced its coldest start to winter since 1943. The city reached a maximum of 11.2 degrees, with severe winds, heavy rain, and snow across a number of regions. This drove a significant increase in demand for gas heating across the state.

While there was only minimal gas powered generation demand, Mortlake power station, located near Iona in the western region of the state, was running from about 2 pm and into the night.[4]

Figure 1.2 shows that the daily demand was forecast to exceed 1 PJ[5] by the 2 pm schedule, while actual demand was significantly higher that this across the middle of the day. In addition to this, the evening peak demand continued exceeding revised forecast levels across the day.[6]

In the late afternoon, AEMO identified a threat to system security affecting total system demand in the Victorian gas market from 6 pm to 11 pm. It was determined gas demand was expected to exceed transmission system capacity and an operational response was required due to participants' inability to implement a market response before the upcoming scheduling interval.[7]

A combination of the high demand during the middle of the day, evening peak demand levels exceeding successive forecast increases, and a number of issues across the transmission system resulted in AEMO applying constraints at Iona and Dandenong connection points. It directed 34 TJ of LNG injections at Dandenong and restricted net withdrawals at Iona to 0 TJ from 6 pm. This resulted in about $151,000 in ancillary payments[8] in Victoria.

The figure below shows hourly injections across the gas day, illustrating that Iona had not been injecting gas at the beginning of the day. With an outage at Brooklyn compressor station Unit 11 making it unavailable for most of the day, and an outage occurring at Unit 12 during the afternoon, system conditions made it difficult to ensure supply to the South West Pipeline, Western Transmission System and Ballarat. Thus, despite flows from NSW through Culcairn reaching their highest level for the year, the lack of compression at Brooklyn (required to move gas from the east and north into the western region of the state) meant that Iona supply was required to maintain adequate pressure.

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4 While the facility was not affected on the day, it is vulnerable due to its reliance on supply from Iona. Jeeralang B power station was also running for a short period during the evening peak.

5 AEMO had applied system overrides to increase aggregate participant demand forecast levels by 43 TJ across the remainder of the gas day by the 2 pm scheduling interval, when real time data was available to assist in forecasting.

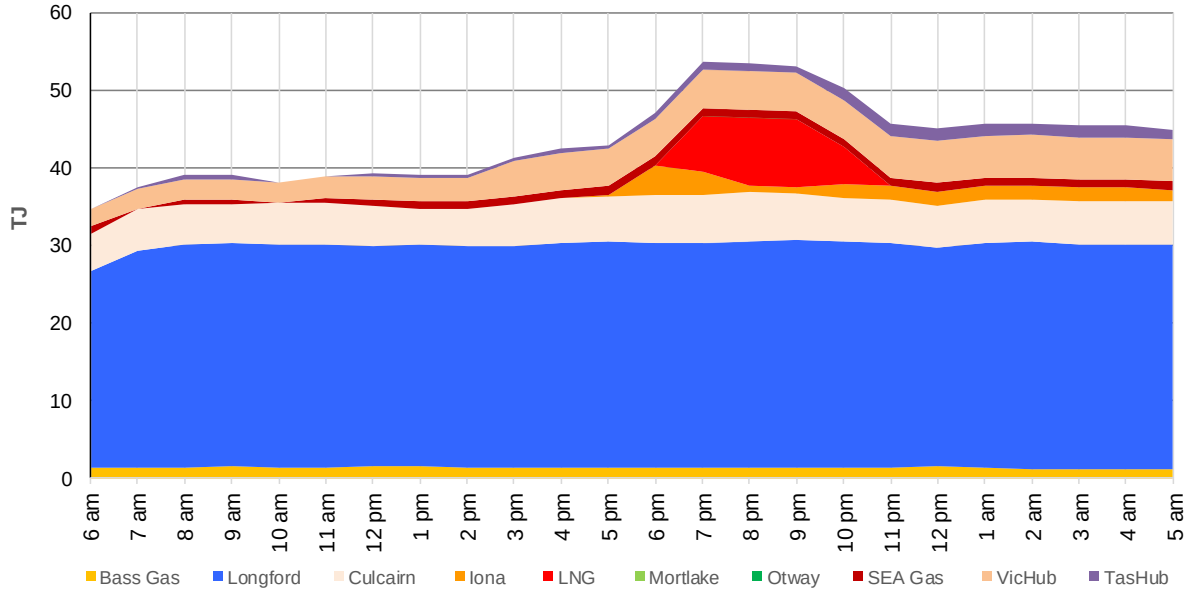
NOTE: Participant demand show in the figure does not include gas required to run compressor stations across the transmission system, system linepack requirements, or other variables such as unaccounted for gas UaFG) measurements.

6 It is likely the lifting of COVID restrictions on 1 June also contributed to higher levels of system demand across the state, with a number of businesses re-opening on the day in addition to many people staying at home during the poor weather conditions.

7 AEMO's market notice indicated the pressure at the Dandenong City Gate (DCG) was projected to breach the 3300 kPa minimum operating pressure.

8 To ensure system security, out of merit order injections may be required, resulting in ancillary payments. Any deviation in costs arising from more expensive gas injections in the operating schedule are generally recouped through uplift payments. Uplift payments relate to a number of different areas including, but not limited to, deviations and demand forecast variations, and congestion limits. Out of merit order injections for the 6 pm schedule resulted in $211,815 of ancillary service costs, which were offset by uplift payments across the other schedules from 10 am. This resulted in a total of $151,815 of ancillary payments accruing across the gas day.

Detailed market analysis figure: Hourly Metered Injections by System Injection Point for the 1 June Gas Day (TJ)



The immediate threat to system security was revoked just prior to 10 pm, with the constraint at Dandenong LNG revised to 29 TJ for the gas day. Iona supply did not need to be constrained on. However the Brooklyn compressor outage continued for 3 days, and constraints limiting net withdrawals at the Iona connection point to 0 TJ remained in place to support pressure levels in the region. Brooklyn compressor Unit 11 was returned to service from 6 pm on 3 June and the threat to system security was cancelled.

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 price[9] which is the schedule at which most gas is traded.

The main drivers[10] 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 forecasts[11], 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.

Ancillary payments for gas injected above the market price are shown above in figure 3.

Figure 1.1: Prices by schedule ($/GJ)

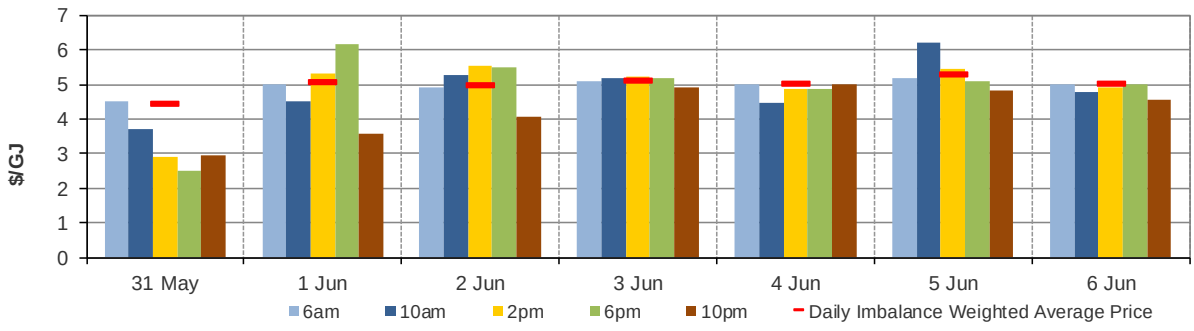
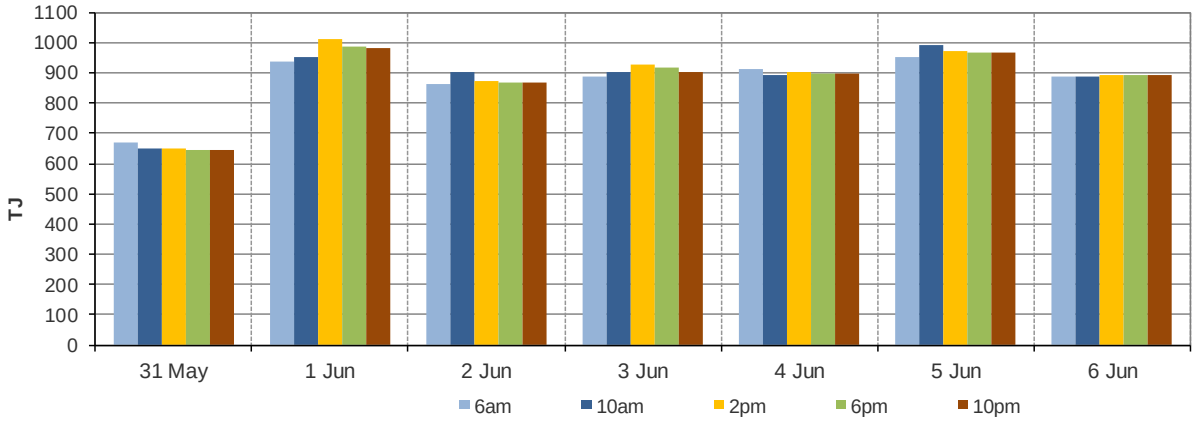


Figure 1.2: Demand forecasts (TJ)



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 (TJ)

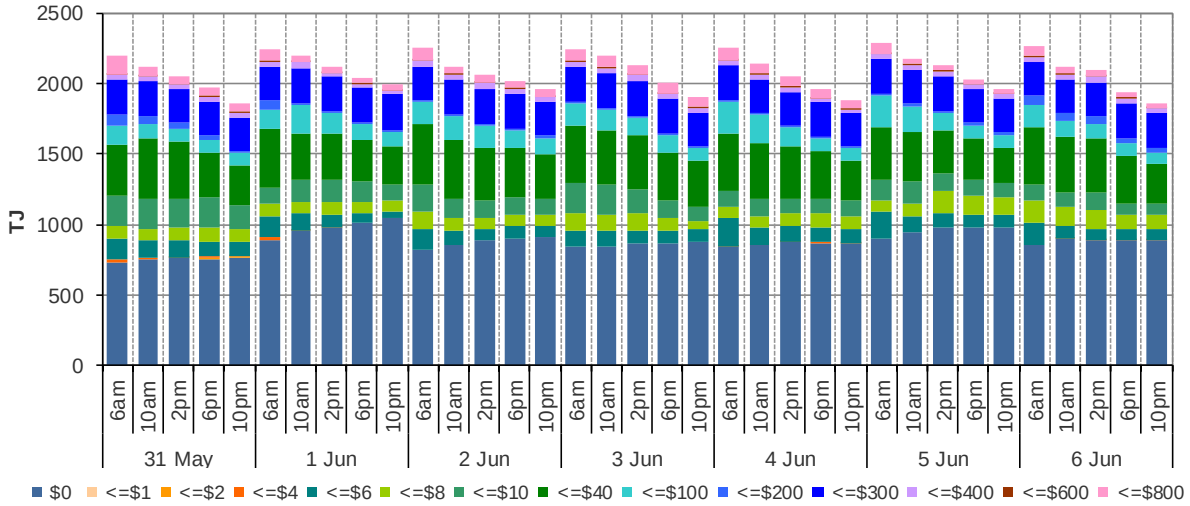


Figure 1.4: Withdrawal bids by price bands (TJ)

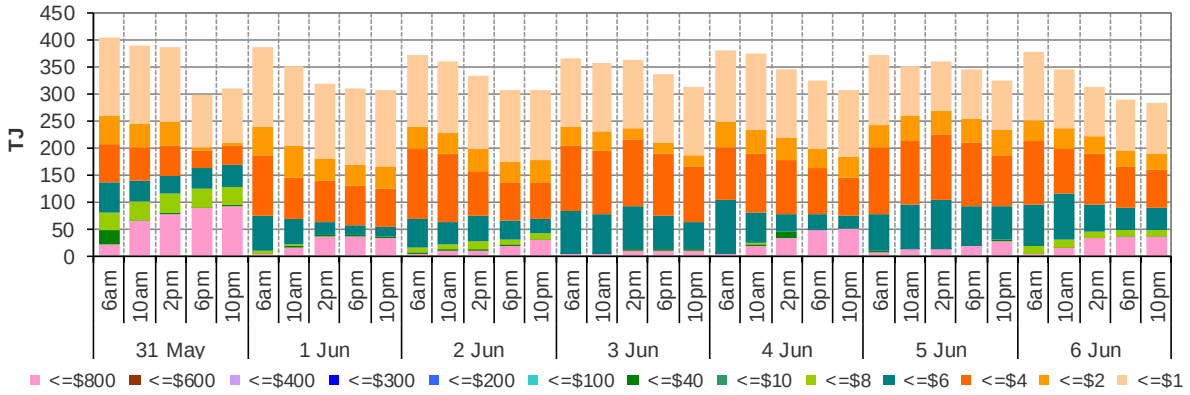
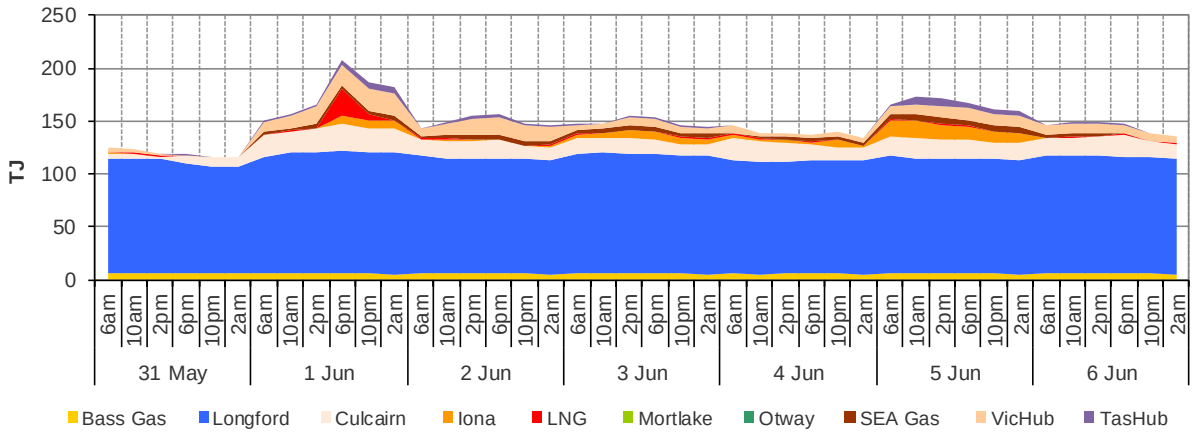


Figure 1.5: Metered Injections by System Injection Point (TJ)



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.

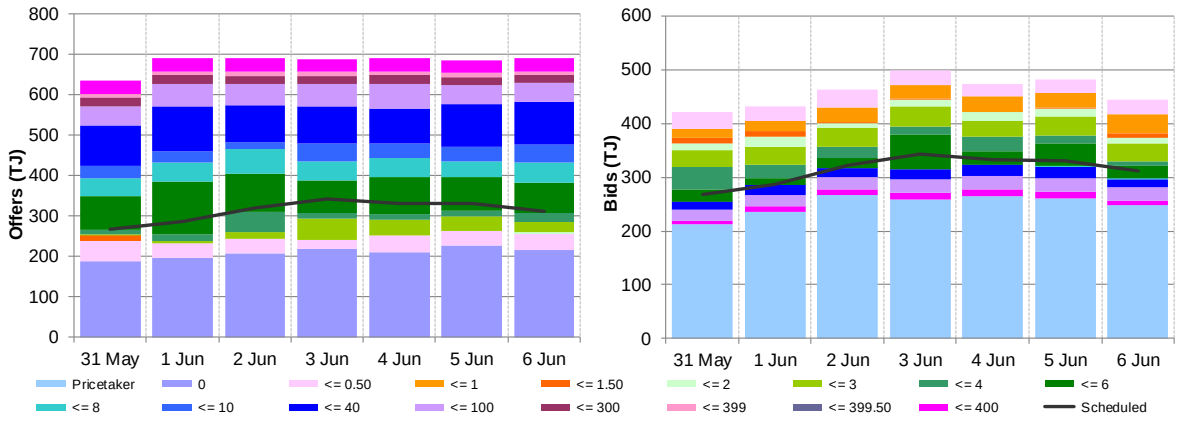
Market Operator Service balancing gas (MOS) payments arise because the amount of gas nominated on pipelines for delivery on a gas day will either exceed or fall short, by some amount, of the amount of gas consumed in the hub. In such circumstances, MOS payments are made to participants for providing 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 ($/GJ)	3.90	4.25	4.29	4.21	4.20	4.30	4.41
Ex ante quantity (TJ)	184	219	222	214	242	267	251
Ex post price ($/GJ)	3.75	4.20	4.29	4.25	4.35	4.00	4.20
Ex post quantity (TJ)	182	217	222	218	265	256	242

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)

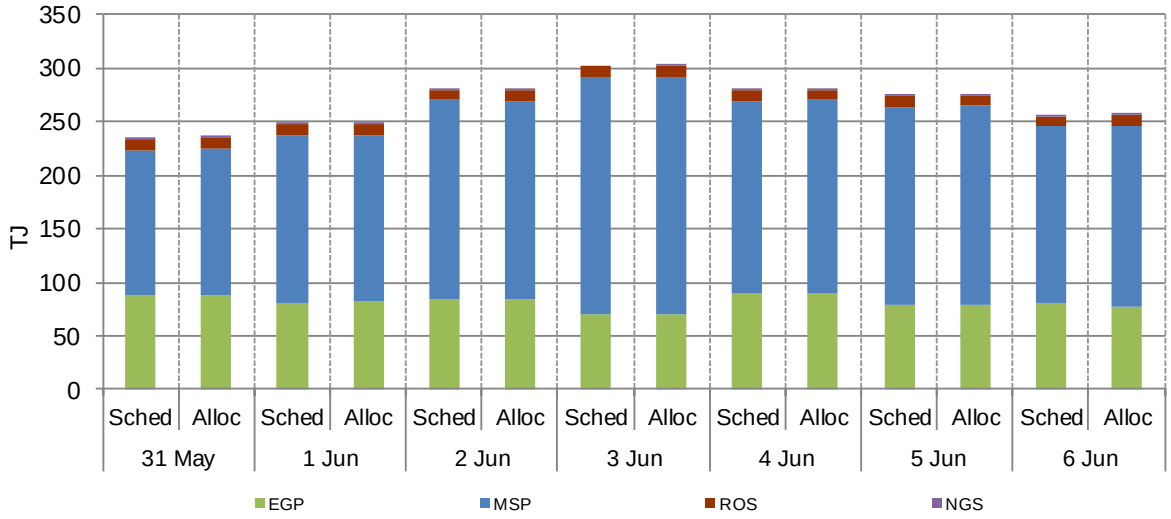
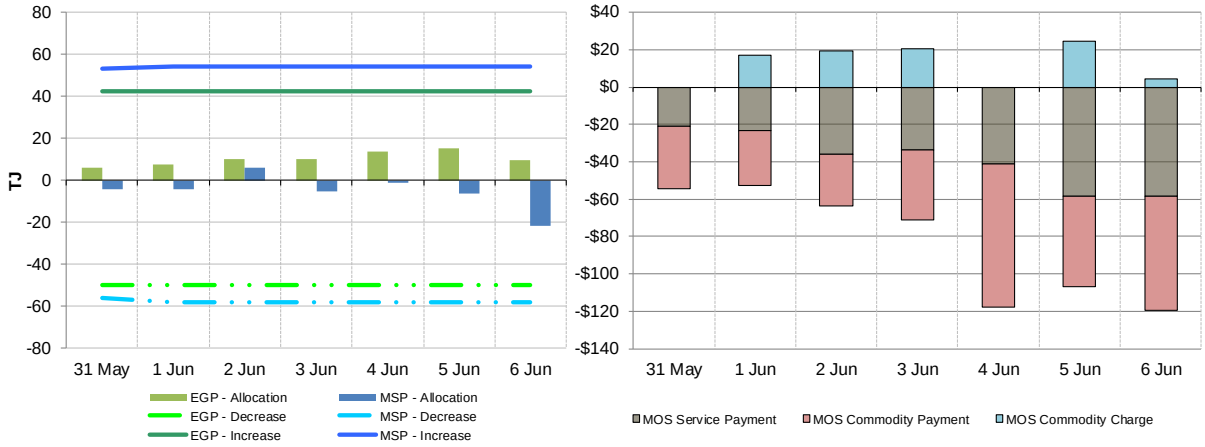


Figure 2.4: SYD MOS allocations (TJ), service payments and commodity payments/charges ($000)[14]



[14] The commodity cost of MOS illustrated on the right of the figure represents the commodity quantity at the D+2 ex ante price. Commodity payments and charges for a given gas day relate to quantities traded two days earlier. That is, the commodity cost for services provided on Sunday will appear in the chart for Tuesday, when the D+2 price is set. In contrast, service payments are shown alongside the day they occurred.

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 ($/GJ)	5.19	5.34	5.75	5.68	5.71	5.51	5.45
Ex ante quantity (TJ)	63	82	76	77	81	79	72
Ex post price ($/GJ)	5.56	5.34	5.75	5.68	5.31	5.71	5.35
Ex post quantity (TJ)	66	79	76	79	73	80	71

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

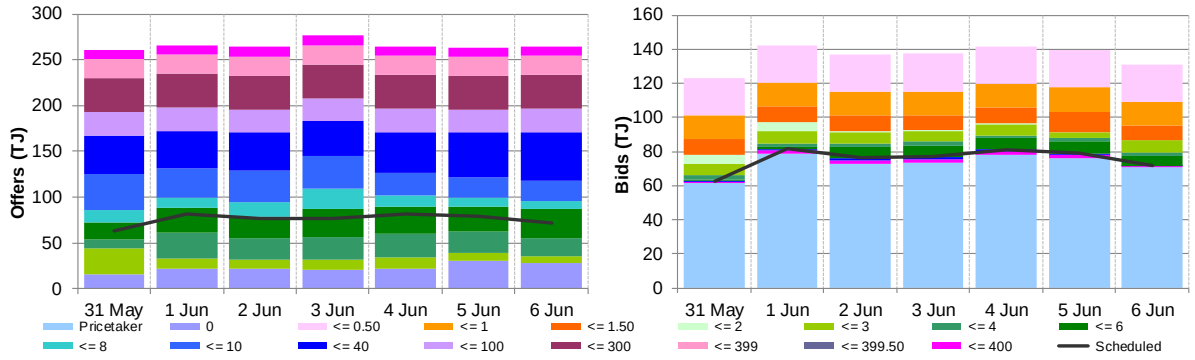


Figure 3.3: ADL net scheduled and allocated gas hub supply (excluding MOS)

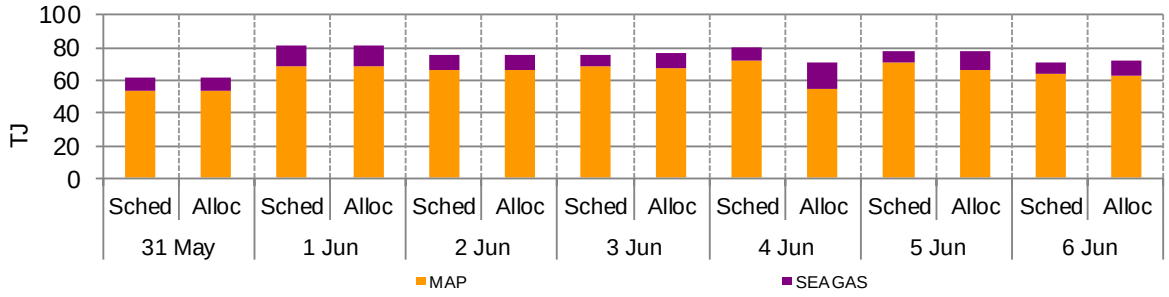
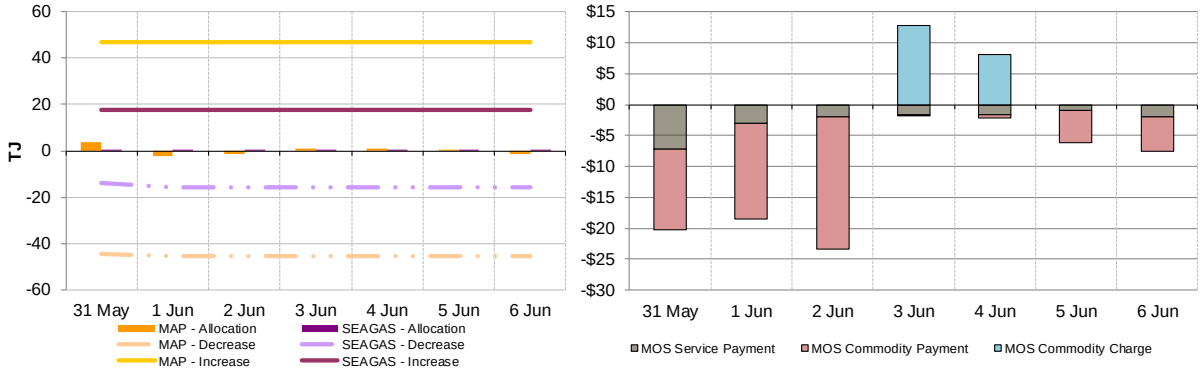


Figure 3.4: ADL MOS allocations (TJ), service payments and commodity payments/charges ($000)



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 ($/GJ)	3.22	3.70	3.70	3.69	3.58	3.52	3.21
Ex ante quantity (TJ)	102	118	121	120	122	118	105
Ex post price ($/GJ)	3.22	3.76	3.90	4.06	4.04	3.78	3.75
Ex post quantity (TJ)	100	122	126	127	128	122	111

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

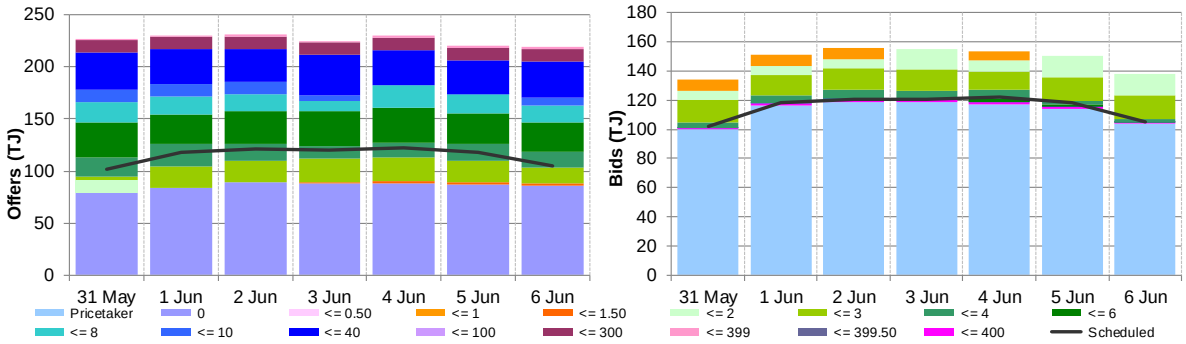


Figure 4.3: BRI net scheduled and allocated gas hub supply (excluding MOS)

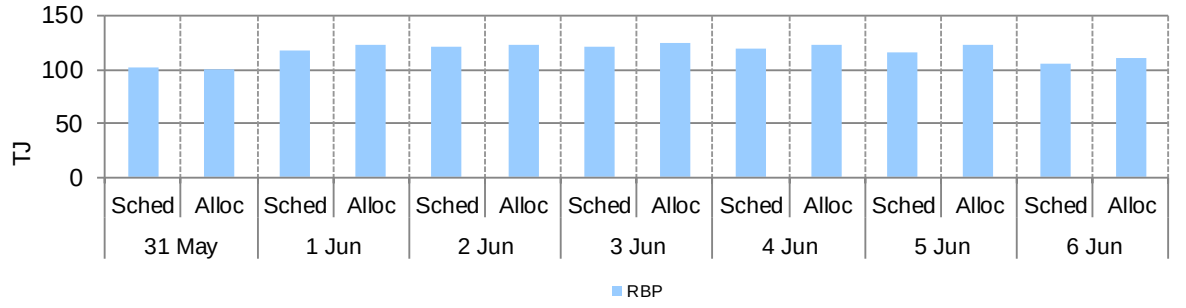
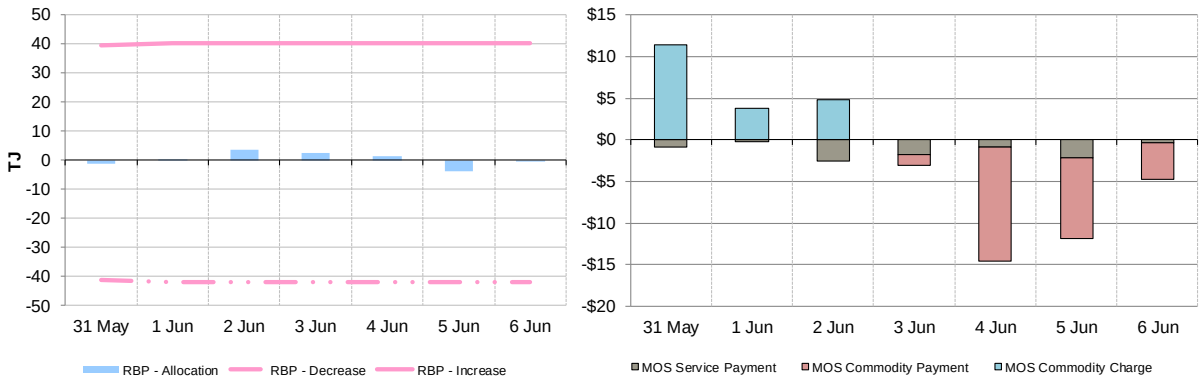


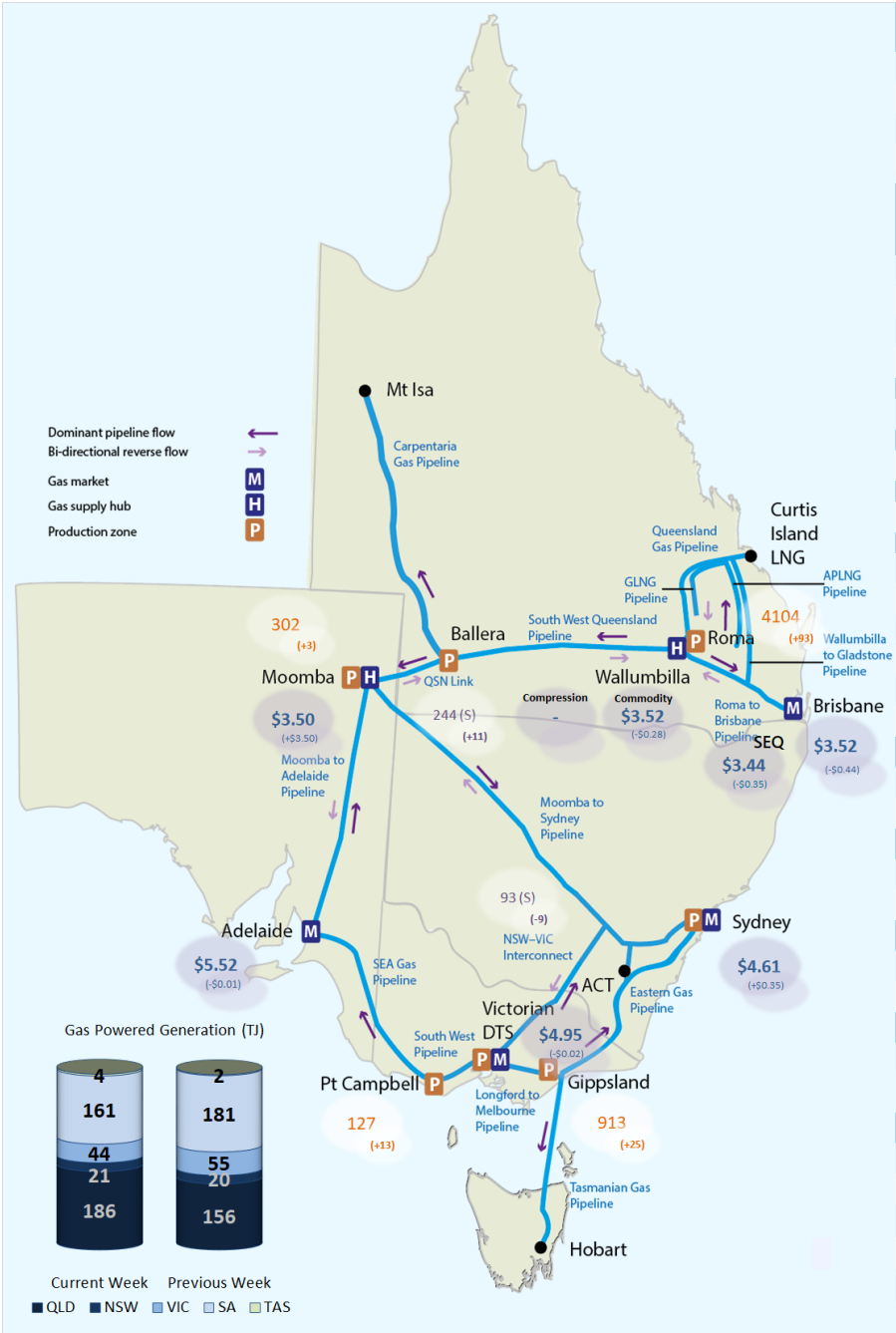
Figure 4.4: BRI MOS allocations (TJ), service payments and commodity payments/charges ($000)



5. National Gas Bulletin Board

Figure 5.1 shows average daily actual flows for the current week[15] from the Bulletin Board (changes from the previous week's average are shown in brackets). Average daily prices[16] are provided for gas markets and gas supply hubs. Average daily quantities are provided for gas powered generation for each region.

Figure 5.1: Gas market data ($/GJ, TJ); Bulletin Board flows (TJ)[17]



Totals	Current Week	Change (TJ)
Domestic gas flows	1867	(+104)
Export gas flows	3470	(+67)
Gas production	5446	(+135)
GPG gas usage	416	(+1)
Pipelines		
Queensland		
Gladstone		
APLNG	1021	(+62)
GLNG	1052	(+18)
QGP	130	(0)
WGP	1397	(-13)
Mt Isa		
CGP	86	(+1)
Brisbane		
RBP	124	(+15)
South West		
SWQP	29	(-1)
Wallumbilla		
BWP	140	(+1)
CRWP	10	(-117)
DDP	57	(-22)
QGP (WAL)	47	(+5)
RBP (WAL)	-61	(-25)
SWQP (WAL)	272	(+16)
New South Wales		
MSP	241	(+24)
EGP	144	(+5)
Victoria		
LMP	761	(+49)
SWP	18	(+23)
South Australia		
MAP	199	(-11)
SEAGas	44	(-17)
Tasmania		
TGP	28	(+5)

Storage (held volume)		
Moomba LDB	19975	(-115)
Iona UGS	18171	(+152)
LNG Storage Dandenong	637	(-14)
Silver Springs	22220	(+19)
Roma UGS	37341	(+266)

15 **Domestic gas flows** are calculated as the total of: **SA** = MAP + SEAGAS; **VIC** = SWP + LMP + (flows towards Victoria on the 'NSW-VIC interconnect'); **NSW/ACT** = EGP + MSP; **TAS** = TGP; **QLD (Brisbane)** = RBP; **QLD (Mt Isa)** = CGP; and **QLD (Gladstone)** = QGP.
Export gas flows are calculated as the total of: the APLNG pipeline; the GLNG pipeline; and the Wallumbilla to Gladstone pipeline.
GPG volumes may include gas usage that does not show up on Bulletin Board pipeline flows.

16 GSH supply is the average daily volume of gas 'traded', while price is a volume weighted average. Optional hub services (for compression and redirection) are shown separately from commodity trades.

17 Net flows are shown for Bulletin Board facilities, as outlined in the user guide.

6. Gas Supply Hub

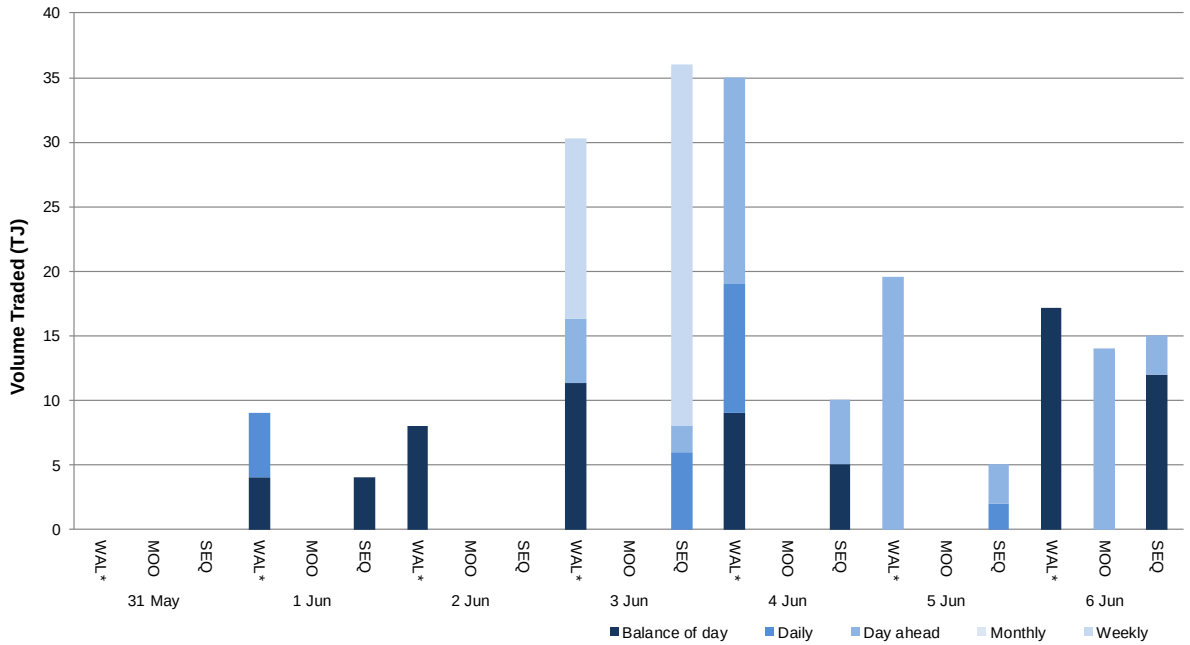
The gas supply hub was established at Wallumbilla in March 2014 to facilitate the voluntary trading of gas between participants, with products listed for sale and purchase at delivery points on three major connecting pipelines. There are separate products for each trading location and delivery period (daily, day-ahead, balance-of-day, weekly and monthly products).[18]

The Moomba hub commenced operation from June 2016 to further facilitate trading on the **MAP** and **MSP**, with trading between the two hubs on the SWQP via a spread product (representing the price differential between the hubs). From October 2016, the addition of a Wallumbilla Compression Product was introduced to facilitate the supply hub's transition from three different trading locations into one. From March 2017, Wallumbilla transitioned into an optional hub services model, replacing the three trading locations (QGP, SWQP and RBP) with a single product at Wallumbilla **(WAL)** and an in-pipe RBP trading location at South East Queensland **(SEQ)**.

This week there were 42 trades for 203 TJ of gas at a volume weighted price of $3.49/GJ. These consisted of 27 trades at WAL (119 TJ at $3.52/GJ) and 14 trades at SEQ (70 TJ at $3.44/GJ). There was one spread trade this week between SEQ and WAL.

Figure 6.1 shows the quantity of gas traded by product type for each trading day on pipeline trading locations in the Wallumbilla and Moomba Gas Supply Hubs.[19]

Figure 6.1: GSH traded quantities



18 Additional information on trading locations and available products is detailed in the user guide.

19 Non-netted (off-market) trades, allowing the selection of specific delivery point at a trading location, are included with other Wallumbilla trades (WAL*).

7. Day Ahead Auction

The DAA is a centralised auction platform providing the release of contracted but un-nominated transportation capacity on designated pipelines and compression facilities across eastern Australia. The auction, enables transportation facility users to procure residual capacity on a day-ahead basis after nomination cut-off, with a zero reserve price and compressor fuel provided.

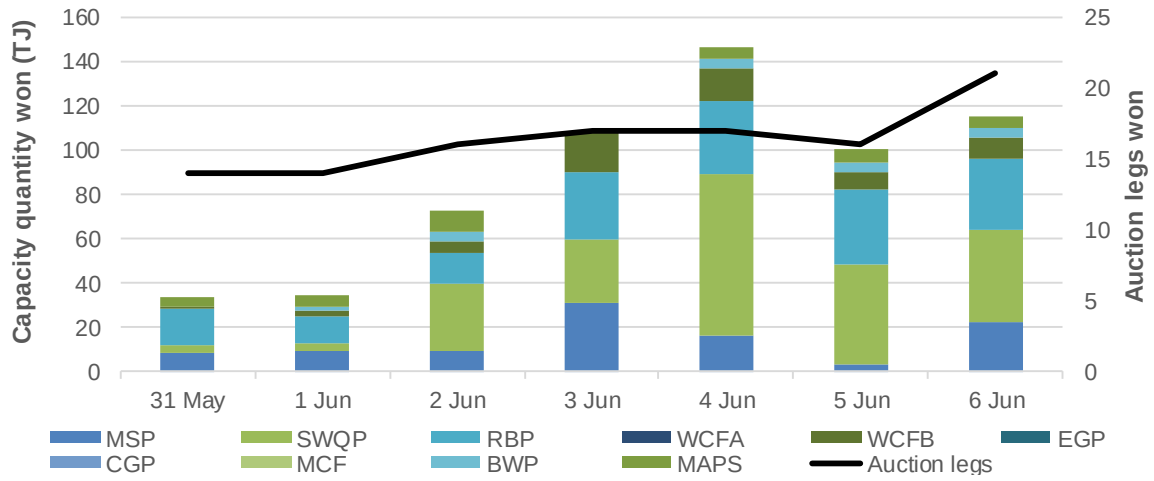
Participants may bid in to the DAA in order to procure the following services:

- park services;
- forward haul pipeline services with products offered in both directions on bi-directional pipelines;
- interruptible backhaul services; and
- stand-alone compression services.

This week, 11 participants took part in the DAA, winning 609 TJ of capacity across 6 different facilities.

Figure 7.1 shows the quantities of gas and auction legs won through the DAA by auction date, with gas deliverable the following gas day up to the level of capacity procured. Auction legs reflect each individual facility transaction.[20]

Figure 7.1: DAA traded quantities and auction legs won



Australian Energy Regulator
June 2020

[20] Additional information is available in the user guide to the AER gas weekly report.