

1 – 7 July 2018

Weekly Summary

There were no significant market events this week. Average prices and demand decreased in all markets compared to the previous week, with the exception of Brisbane where demand remained stable. For the financial year 2017/18, prices decreased across all regions compared to the previous financial year.

The detailed market analysis section of this report highlights a number of longer term trends in the gas markets, covering gas prices and highlighting price divides which have occurred between northern and southern markets. Other topics discussed include gas production and LNG export trends, Gas Powered Generation (GPG) trends, and developments in the Gas Supply Hub (GSH).

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**).

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

	Victoria		Sydney		Adelaide		Brisbane	
	Price	Demand	Price	Demand	Price	Demand	Price	Demand
01 Jul - 07 Jul 2018	9.52	893	9.69	276	9.29	81	9.85	88
% change from previous week	-5	-11	-4	-9	-10	-11	-13	0
17-18 financial year	8.03	573	8.50	252	8.06	61	7.46	95
% change from previous financial year	-6	2	-4	3	-9	-3	-9	12

¹ Average daily quantities are displayed for each region. The weighted average daily imbalance price applies for Victoria.

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)²

	Moomba		South East Queensland		Wallumbilla	
	Price	Quantity	Price	Quantity	Price	Quantity
01 Jul - 07 Jul 2018	9.52	28	9.57	194	9.60	38
% change from previous week	-7	100	0	-45	-3	-77
17-18 financial year	7.97	27	7.49	9614	7.80	4516
% change from previous financial year	-	-	2	866	-6	-49

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

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

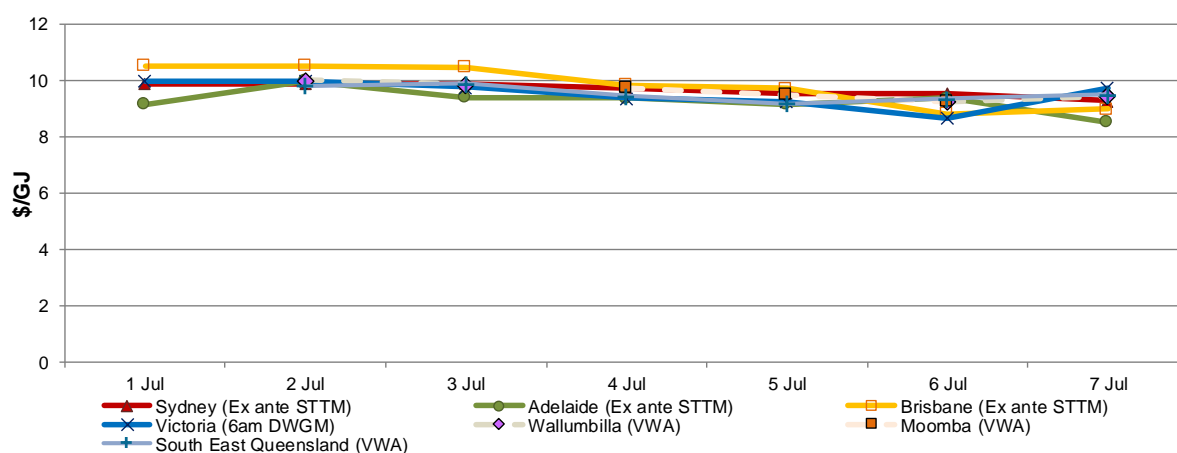


Figure 4 compares average ancillary market payments (VGM) and balancing gas service payments (STTM) against historical averages.

Figure 4: Average ancillary payments (\$000)

	Victoria Ancillary Payments*	Sydney MOS	Adelaide MOS	Brisbane MOS
01 Jul - 07 Jul 2018	-	19.93	3.35	1.69
% change from previous week	-	-9	-37	108
17-18 financial year	-	30.50	5.38	2.11
% change from previous financial year	-	-40	-69	27

* 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.

² 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).

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 traded for the current week (\$/GJ, TJ)

	Moomba		South East Queensland		Wallumbilla*	
	VWA price	Quantity	VWA price	Quantity	VWA price	Quantity
Balance of day	9.58	23.0	9.61	55.0	9.52	23.0
Daily	-	-	9.44	38.0	9.50	8.0
Day ahead	9.25	5.0	9.37	24.0	10.01	7.0
Weekly	-	-	9.67	77.0	-	-
Monthly	-	-	-	-	-	-
Total	9.52	28.0	9.57	194.0	9.60	38.0

* 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	1515	842	1536	3893
Export Pipeline Flows	1332	705	1179	3217
% change from previous week (pipeline flows)	1	2	-3	0
17-18 financial year flows	1404	869	1075	3348

* 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

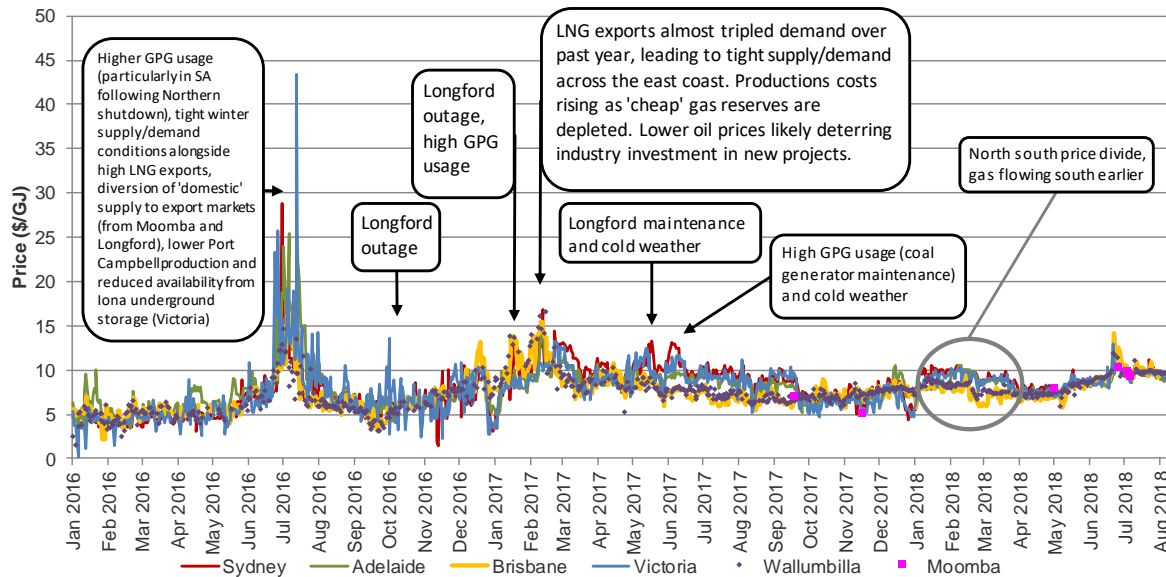
With the end of the financial year, this section highlights a number of longer term trends in the gas markets including gas prices, gas production, LNG export trends, Gas Powered Generation (GPG) trends, and developments in the Gas Supply Hub (GSH).

Gas price and demand trends

Gas market prices decreased in all regions compared to the previous financial year, from 4 percent in Sydney up to 9 percent lower in Adelaide and Brisbane. In Brisbane, Adelaide and Victoria, the significant reduction was largely linked to the higher market prices which occurred across winter 2016.

Figure 7 shows gas market price trends from the start of 2017, highlighting events which have impacted prices.

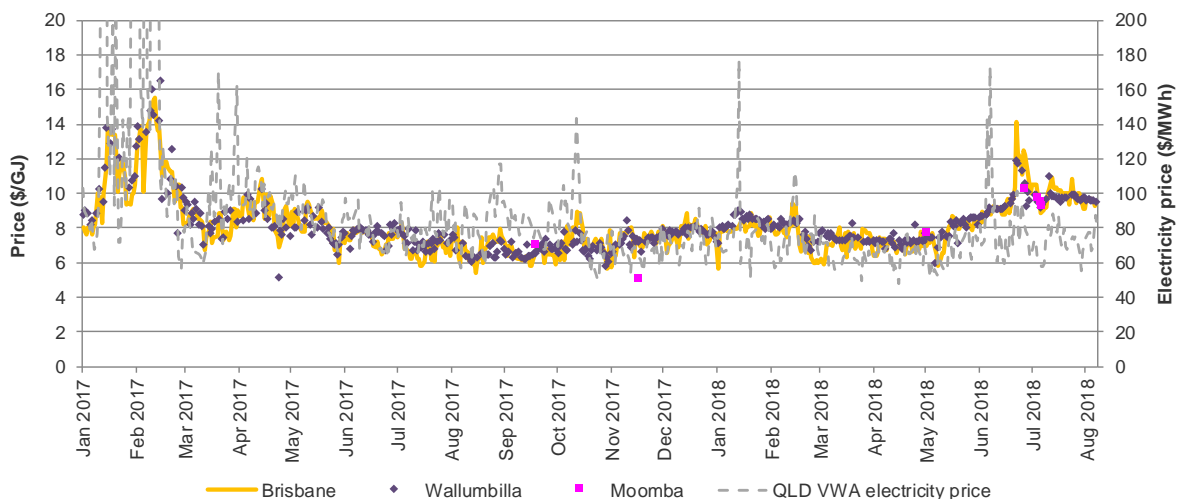
Figure 7: Long term gas price trends



Earlier this year, a price divide³ between the north and markets to the south was evident for the first quarter of 2018, with Queensland gas prices around \$1-\$3/GJ lower than those in Victoria, New South Wales and Adelaide. This coincided with gas flowing south from Queensland much earlier this year, with intermittent deliveries south from as early as February, and consistent southerly flows from early May.⁴

While financial year prices decreased, average monthly gas prices in Brisbane are higher this year (for June/July) compared to the previous winter, coinciding with Asian spot futures prices for the same period almost doubling from the previous year. However, this has not translated into higher electricity prices in the National Electricity Market (NEM) in the region, as additional coal output has suppressed NEM price increases (see Figure 8, discussed further below, *Gas Generation*).

Figure 8: Queensland gas and electricity prices



³ An earlier price divide also occurred in 2017, with differences over May, June, July and September 2017, southern gas was cheaper by average of over \$2/GJ. Contributing factors was significant increase in gas production around Roma (Queensland) and outages at export plants which suppressed prices in northern markets. The \$2/GJ price difference may also reflect the cost of procuring gas in Queensland and transporting (around \$2-3/GJ) to VIC/NSW/SA.

⁴ A number of swap agreements were announced in 2017 between Queensland exporters and southern buyers which can currently be executed, reducing the price difference between states.

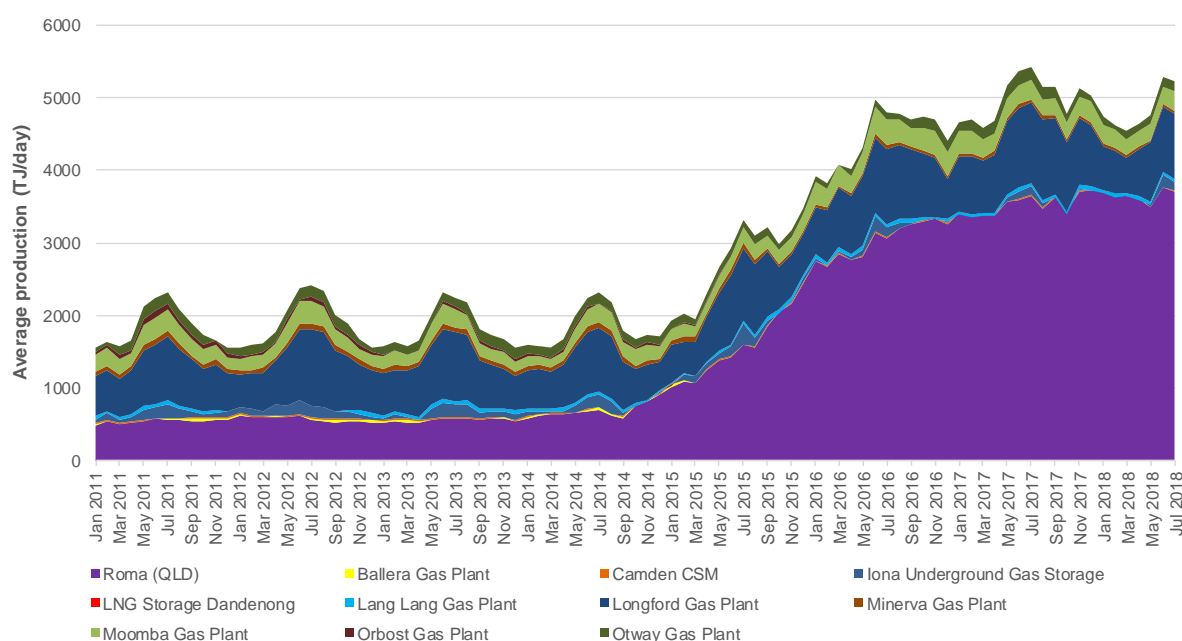
Average daily demand was up slightly in Victoria and Sydney across the financial year, and down slightly in Adelaide.⁵ Higher demand in Brisbane reflects the Swanbank E generator coming back online from early November 2017.⁶

Gas production trends and LNG exports

While production levels have decreased at Longford⁷ in the south, following record high output levels in 2017, production in the north at Roma has continued to increase with a new daily record set on 29 July (3,855 TJ). Total record production is high (>5,000 TJ/day), and been consistently achieved on the back of large exporters who are selling more to the domestic market.

Figure 9 shows average daily production levels across the east coast for each month.

Figure 9: East coast gas production



Total LNG export flows are up 4 percent on the previous financial year (132 TJ/day). APLNG shipped 21 percent more (243 TJ/day), GLNG was slightly higher than the previous financial year (30 TJ/day, up 4 percent) and QCLNG had lower export flows (down 141 TJ/day, 12 percent).

Export quantities reduced following the end of APLNG's commissioning period at the end of 2016, and Queensland has been exporting below full capacity, providing the ability exporters to provide more gas to the domestic market.

Asian spot price rose significantly over 2017-18 as China substantially increased demand for LNG transition away from coal. The highest export quantities occurred in December 2017, coinciding with monthly Asian spot prices of around \$14/GJ delivered.

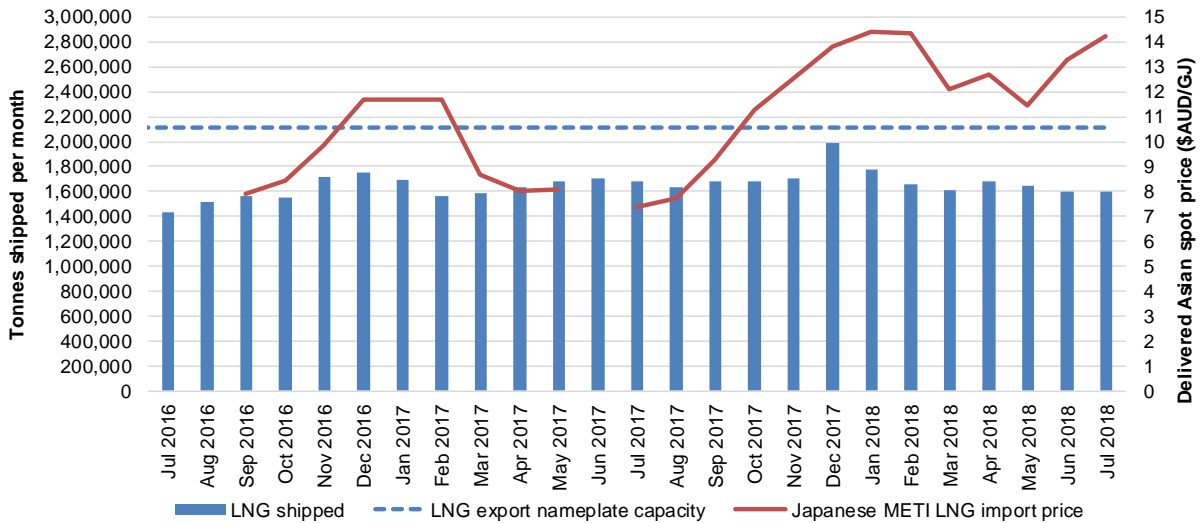
Figure 10 shows the spot-based Japanese LNG import price and LNG export volumes from Gladstone following the completion of the final export project. LNG export volume in tonnes is sourced from Port of Gladstone data.

⁵ 'Demand' refers to gas demand within the gas markets, and does not necessarily include demand from a number of gas generators and industry outside those regions.

⁶ Swanbank E generated electricity on a consistent basis across the first quarter of 2018 using around 25 – 50 TJ/day.

⁷ Longford production is transitioning from old legacy fields to new fields, and the facility is expected to produce around 20 to 30 percent less than the record production last year.

Figure 10: Export volumes and Asian spot price



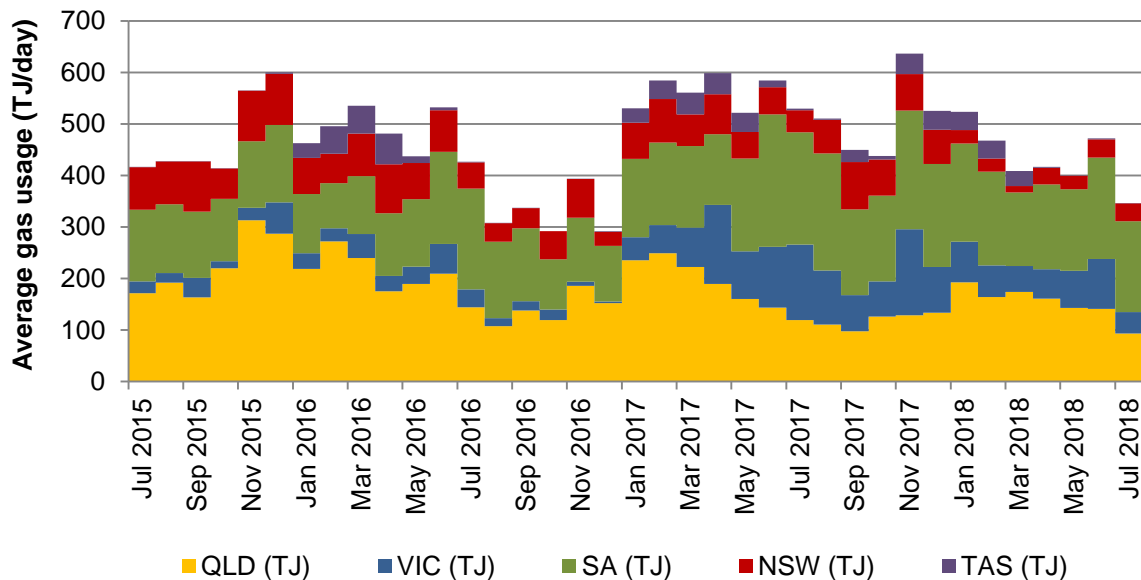
Source: [Port of Gladstone data](#), [METI data](#)

Gas Generation

Compared to the previous year, electricity output from gas powered generators was lower in Queensland (down 16 percent) and New South Wales (down 12 percent), and higher in Victoria (up 68 percent) and South Australia (up 30 percent).⁸

Figure 11 shows the estimated Gas Powered Generation (GPG) gas usage using ACIL Tasman heat conversion rates, as outlined in the [weekly report user guide](#).

Figure 11: Gas Powered Generation (GPG)



In Victoria, gas generation as a proportion of total electricity supply was up from 3 percent to 7 percent, offsetting the drop in coal generation following the closure of Hazelwood power station in late-March 2017. Victorian gas powered electricity generation spiked in November 2017 when multiple baseload plants in Victoria and New South Wales experienced outages alongside unusually consistent hot weather.

⁸ Financial year figures for 2016/17 and 2017/18 do not reveal the effect in South Australia following the closure of the coal fired Northern Power Station from May 2016. Gas generation increased in the region following the closure to offset the reduction in generation output from the facility.

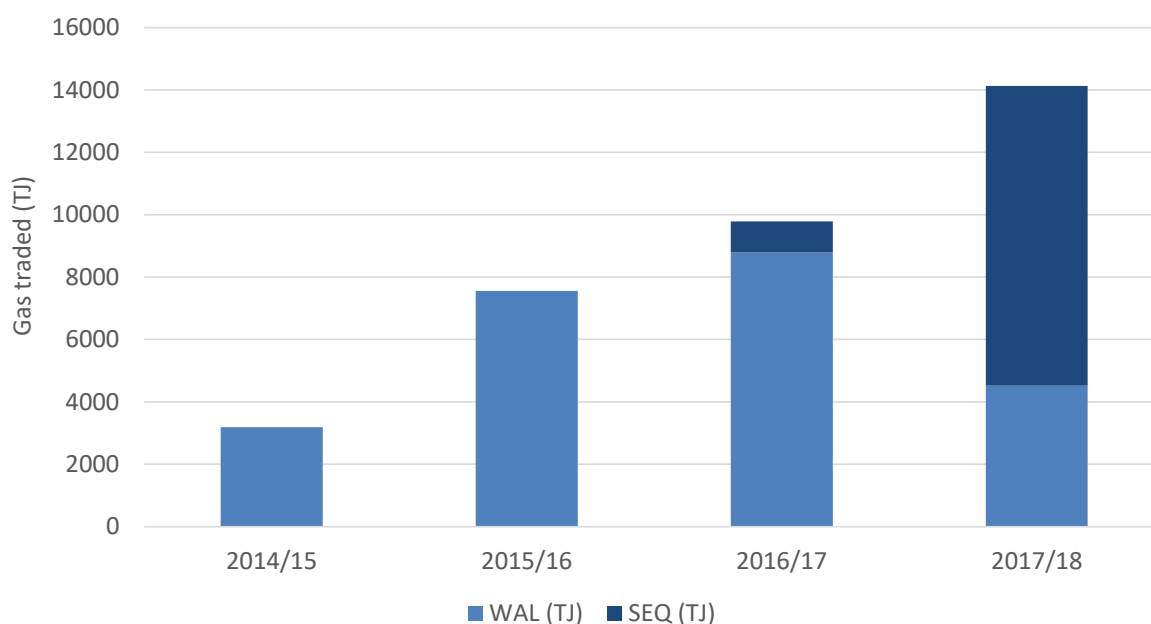
The other regions saw the opposite trend, with a ramp up in coal generation output. In Queensland, the higher coal generation follows government reforms aimed at stabilising Queensland electricity prices.⁹ Queensland has historically been the largest user of gas for electricity generation, but this usage has been declining following the introduction of the reforms.

Gas Supply Hub trends

Trade at the Wallumbilla hub has been increasing since its establishment. South East Queensland (SEQ) is a relatively newly formed notional trading point that has emerged as a point where the bulk of trade is occurring. AEMO is now developing a reference price for SEQ separate to Wallumbilla (the two trading points occasionally show different prices for trades).

Figure 12 shows the total amount of gas settled through the Wallumbilla Gas Supply Hub (GSH) exchange for each financial year from 2014/15. The South East Queensland product was introduced alongside market changes implemented from 28 March 2017.

Figure 12: Wallumbilla gas trades settled through the exchange



⁹ <https://www.dnrme.qld.gov.au/energy/initiatives/powering-queensland>. There is also additional information on electricity market price trends in our weekly electricity report (<https://www.aer.gov.au/wholesale-markets/market-performance/electricity-report-1-7-july-2018>).

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 price¹⁰ which is the schedule at which most gas is traded.

The main drivers¹¹ 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 forecasts¹², 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)

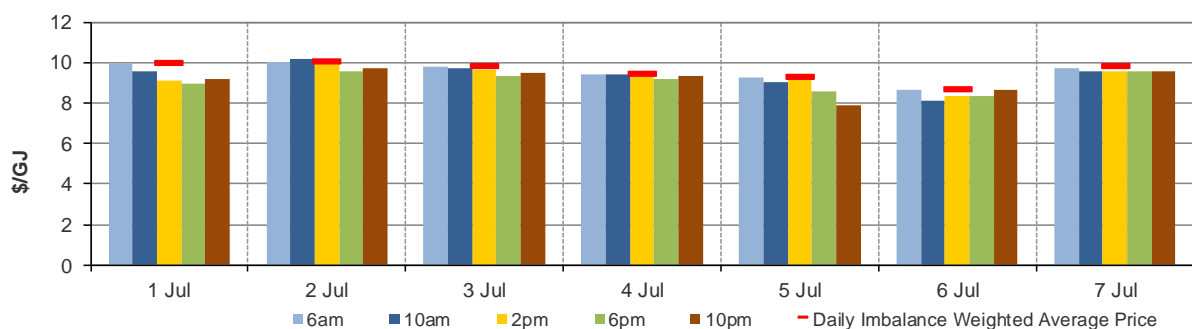
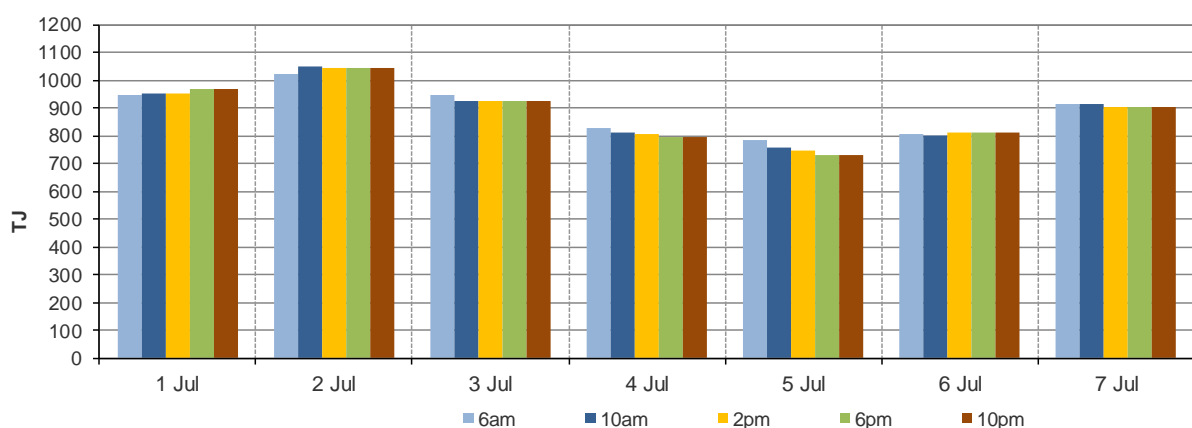


Figure 1.2: Demand forecasts (TJ)



¹⁰ 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.

¹¹ 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.

¹² 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)

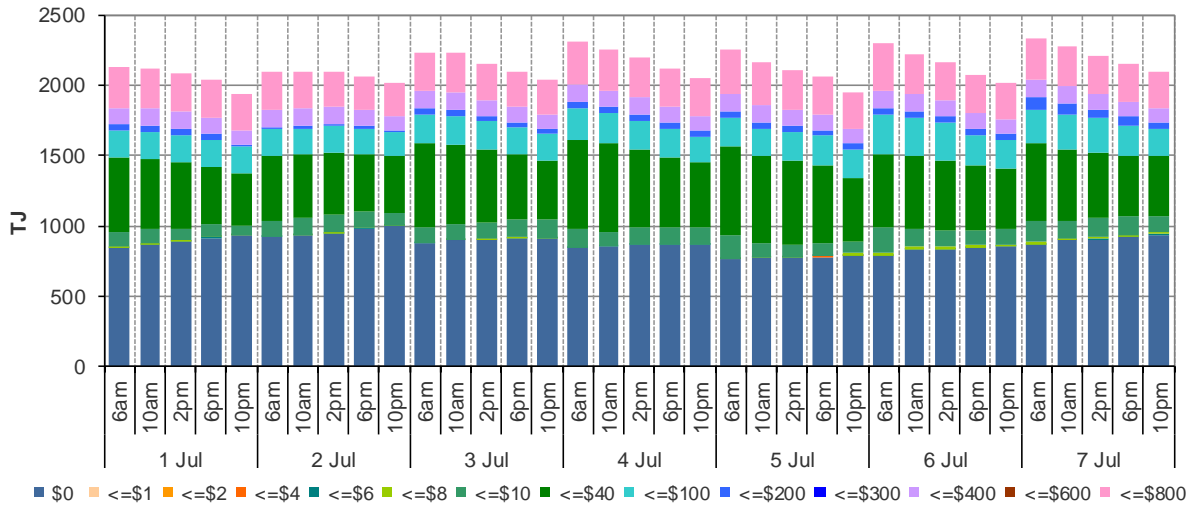


Figure 1.4: Withdrawal bids by price bands (TJ)

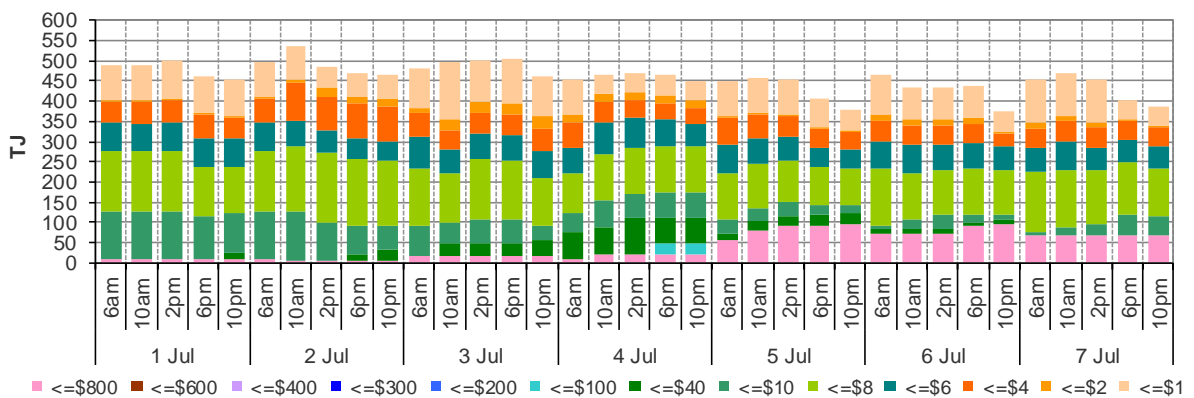
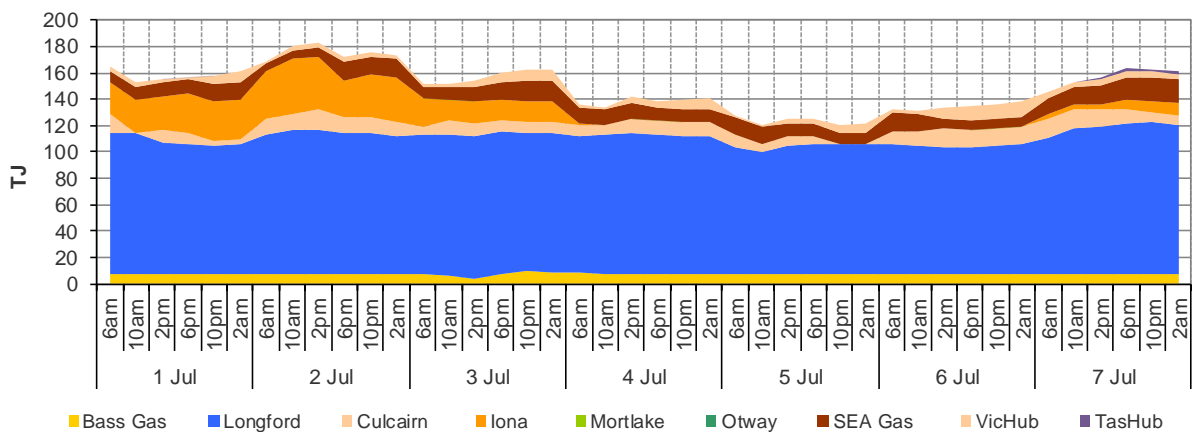


Figure 1.5: Metered Injections by System Injection Point (TJ)



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.¹³ 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](#).

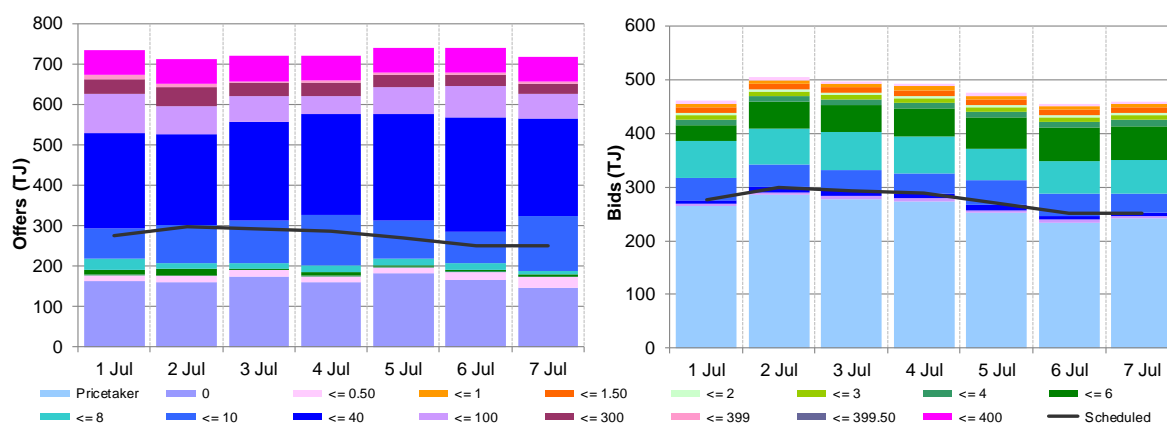
Market Operator Service balancing gas (MOS) payments arise because the amount of gas nominated on pipelines for delivery on a gas day will either exceed or fall short, by some amount, of the amount of gas consumed in the hub. In such circumstances, MOS payments are made to participants for providing a service to park gas on a pipeline or to loan gas from a pipeline to the hub.¹⁴

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)	9.90	9.90	9.89	9.72	9.55	9.56	9.29
Ex ante quantity (TJ)	276	299	293	288	271	252	252
Ex post price (\$/GJ)	9.80	9.90	9.89	9.72	9.55	9.65	9.29
Ex post quantity (TJ)	272	298	293	290	270	260	260

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



¹³ 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.

¹⁴ 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)

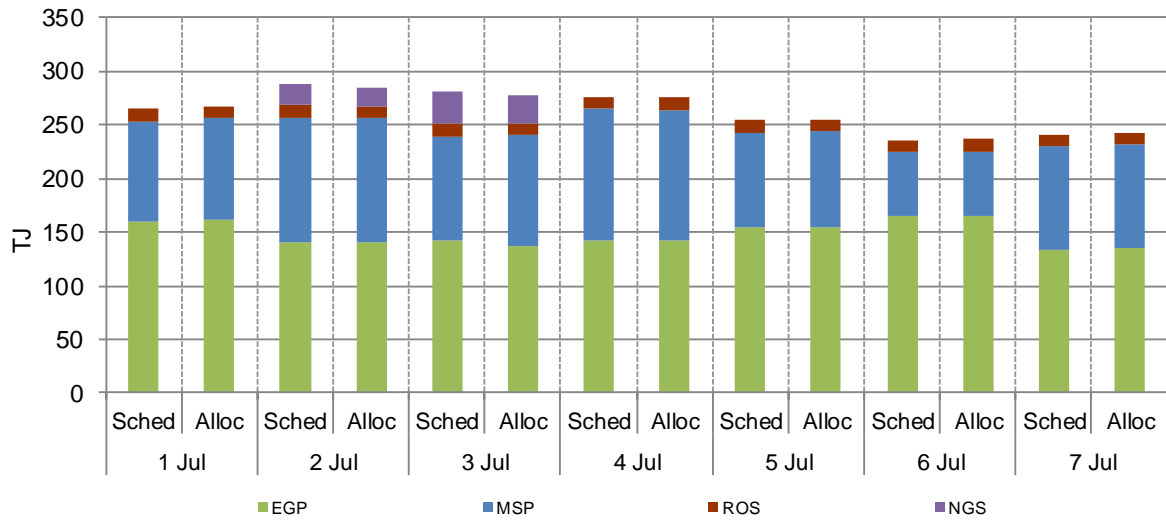
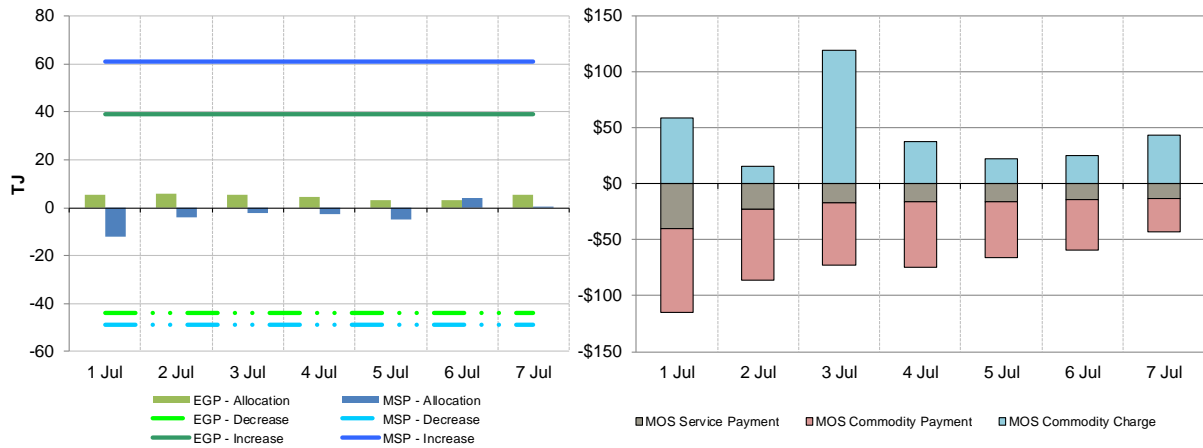


Figure 2.4: SYD MOS allocations (Tj), service payments and commodity payments/charges (\$000)¹⁵



¹⁵ 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)	9.15	10.00	9.41	9.38	9.16	9.38	8.53
Ex ante quantity (TJ)	80	88	82	77	81	83	74
Ex post price (\$/GJ)	9.15	10.10	10.00	9.40	9.16	9.38	8.53
Ex post quantity (TJ)	80	90	95	79	80	82	74

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

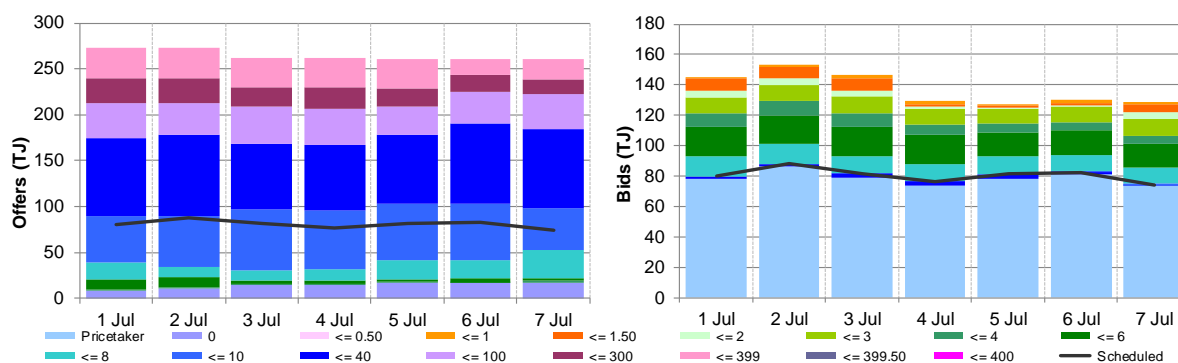


Figure 3.3: ADL net scheduled and allocated gas hub supply (excluding MOS)

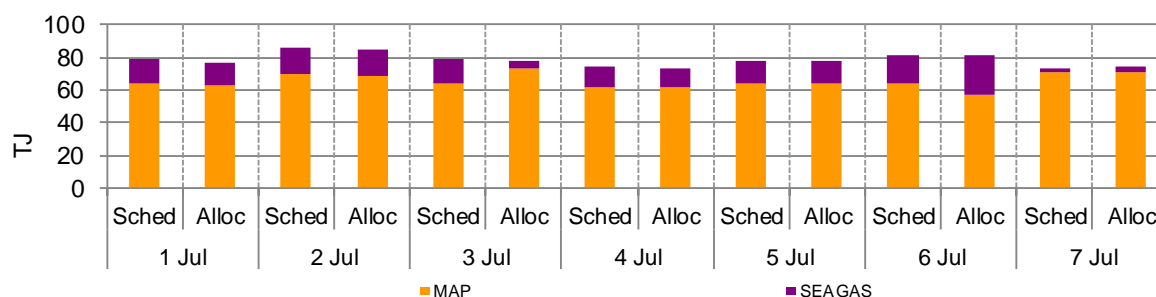
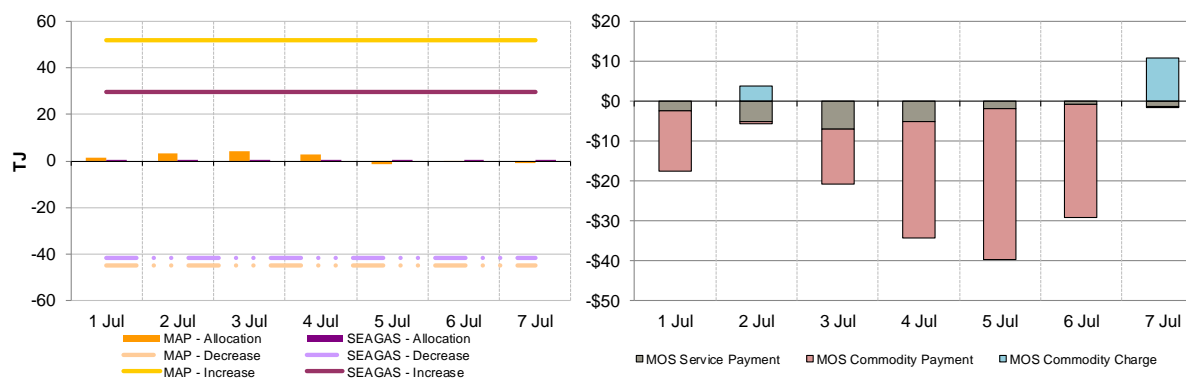


Figure 3.4: ADL MOS allocations (TJ), service payments and commodity payments/charges (\$000)



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)	10.53	10.53	10.49	9.83	9.73	8.83	8.99
Ex ante quantity (TJ)	80	92	94	90	95	85	81
Ex post price (\$/GJ)	8.99	9.06	10.01	9.98	9.01	8.83	8.84
Ex post quantity (TJ)	71	88	92	91	88	81	76

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

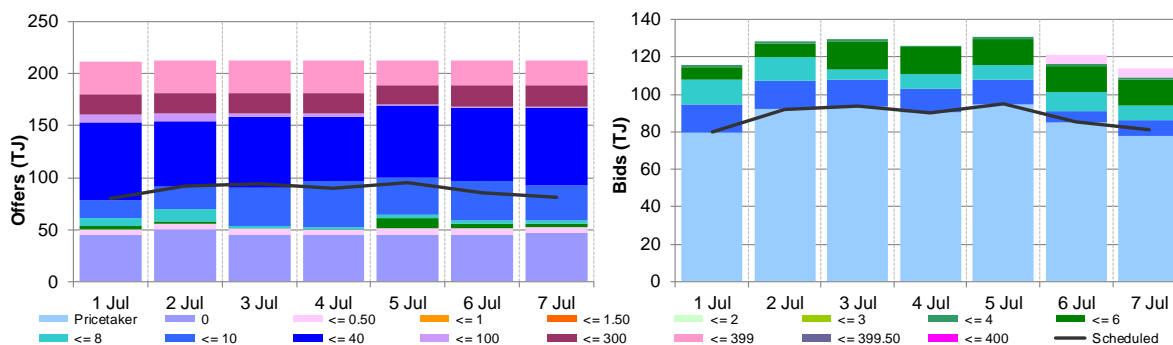


Figure 4.3: BRI net scheduled and allocated gas hub supply (excluding MOS)

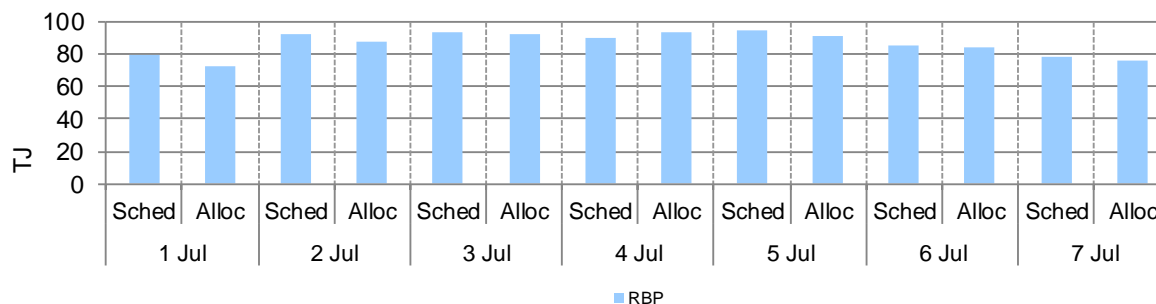
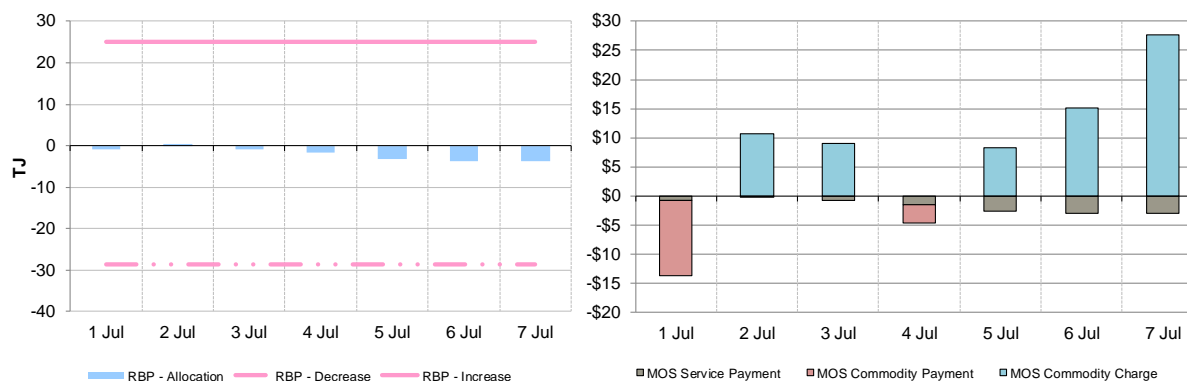


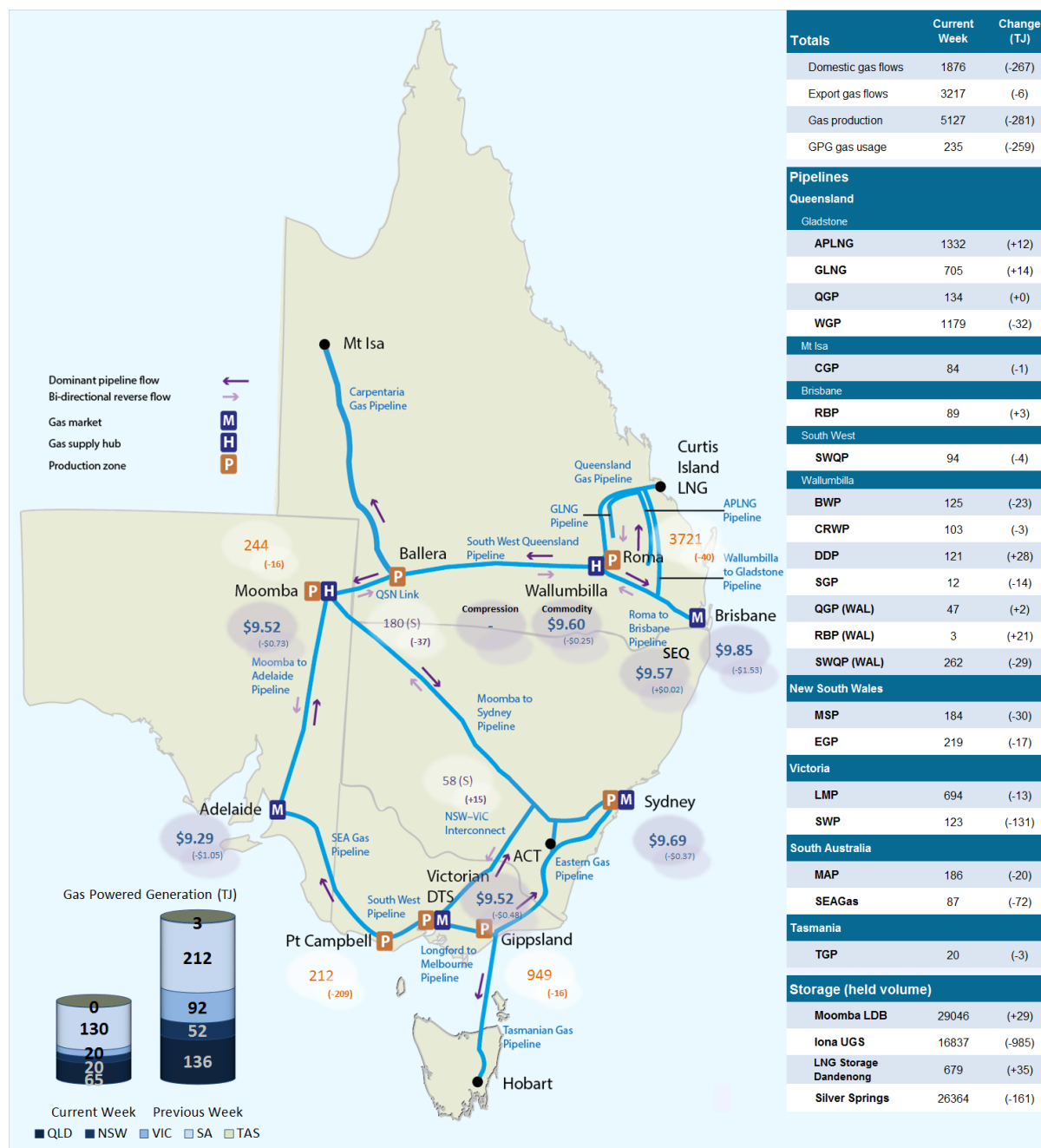
Figure 4.4: BRI MOS allocations (TJ), service payments and commodity payments/charges (\$000)



5. National Gas Bulletin Board

Figure 5.1 shows average daily actual flows for the current week¹⁶ from the Bulletin Board (changes from the previous week's average are shown in brackets). Average daily prices¹⁷ 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)¹⁸



¹⁶ 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.

¹⁷ 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.

¹⁸ Net flows are shown for Bulletin Board facilities, as outlined in the [user guide](#).

6. Gas Supply Hub

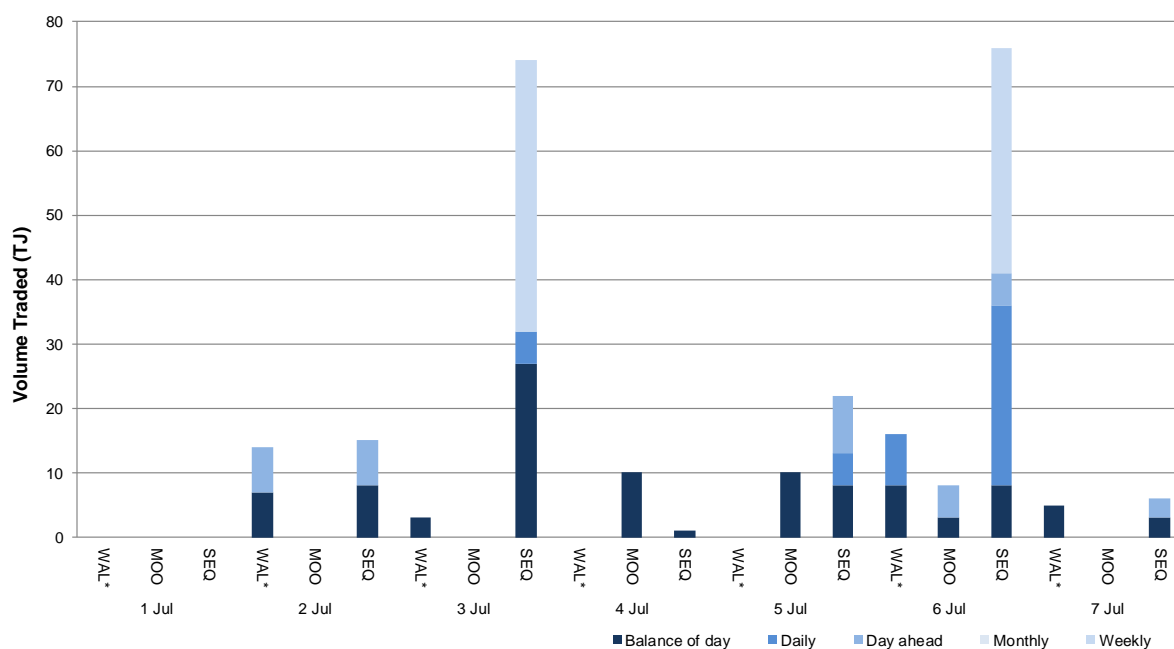
The gas supply hub was established at Wallumbilla in March 2014 to facilitate the voluntary trading of gas between participants, with products listed for sale and purchase at delivery points on three major connecting pipelines. There are separate products for each trading location and delivery period (daily, day-ahead, balance-of-day, weekly and monthly products).¹⁹

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 50 trades for 260 TJ of gas at a volume weighted price of \$9.57/GJ. These consisted of 9 trades at WAL (38 TJ at \$9.60/GJ, 16 TJ was off-market), 37 trades at SEQ (194 TJ at \$9.57/GJ, 109 TJ was off-market) and 4 off-market trades at MOO (MSP, 28 TJ at \$9.52/GJ). There were 5 spread trades.

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.²⁰

Figure 6.1: GSH traded quantities



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¹⁹ Additional information on trading locations and available products is detailed in the [user guide](#).

²⁰ Non-netted (off-market) trades, allowing the selection of specific delivery point at a trading location, are included with other Wallumbilla trades (WAL*).