Gas Market Report

AUSTRALIAN ENERGY REGULATOR

27 December 2015 – 2 January 2016

Weekly summary

APLNG continued to increase export flows on the APLNG pipeline this week in preparation for its first shipments of LNG from Curtis Island and it increased production from its Roma facilities over a number of days.

A number of new records were set for gas delivery quantities related to the Queensland LNG export projects. APLNG pipeline flows reached a new record maximum of 646 TJ on the 30 December gas day, while flows on the QSN Link from South Australia reached 323 TJ by 2 January exceeding the record set on 30 December (of 233 TJ).

In early January flows on the GLNG pipeline reached a new record level of 793 TJ, coinciding with flows from the Moomba zone of the Moomba to Sydney Pipeline reversing into Queensland from the start. This implies that a larger quantity of gas was delivered into the Moomba zone via the Moomba to Sydney Pipeline than was received from the zone. This gas was shipped into Queensland via the QSN Link.

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
27 Dec - 02 Jan 2016	4.76	5.19	5.57	4.58
% change from previous week	-11	-7	-7	30
15-16 financial YTD	4.46	4.66	5.09	3.70
% change from previous financial YTD	28	51	43	101

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)
27 Dec - 02 Jan 2016	4.76	-	287
% change from previous week	-11	-	-6
15-16 financial YTD	4.46	-	627
% change from previous financial YTD	28	-	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)
27 Dec - 02 Jan 2016	5.19	5.21	23.03	182	183
% change from previous week	-7	-3	-5	-7	-5
15-16 financial YTD	4.66	4.39	24.34	240	235
% change from previous financial YTD	51	40	71	-7	-10

Figure 4: Adelaide STTM

	Ex ante price ($/GJ)	Ex post price ($/GJ)	MOS payments ($000)	Ex ante quantity (TJ)	Ex post quantity (TJ)
27 Dec - 02 Jan 2016	5.57	5.72	3.34	40	42
% change from previous week	-7	-7	-34	-8	-7
15-16 financial YTD	5.09	5.24	8.98	66	68
% change from previous financial YTD	43	49	-21	0	3

Figure 5: Brisbane STTM

	Ex ante price ($/GJ)	Ex post price ($/GJ)	MOS payments ($000)	Ex ante quantity (TJ)	Ex post quantity (TJ)
27 Dec - 02 Jan 2016	4.58	4.51	4.09	72	73
% change from previous week	30	20	230	-4	-4
15-16 financial YTD	3.70	3.66	1.49	89	88
% change from previous financial YTD	101	122	24	-41	-41

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

Figure 1.1 shows that the price in Victoria reached $6.51/GJ during the first schedule of the 30 December gas day as a result of injection constraints.

Figure 2.4 shows that counteracting MOS occurred on a number of days in the Sydney hub this week, with requirements most significant on the 27, 28 and 31 December gas days. On 28 December, demand in the hub was over forecast by around 10.7 TJ, while net forecasting errors were small on the other days.

As shown in figure 4.4, MOS increase requirements of around 4.5 TJ or more occurred in Brisbane over three gas days this week as a result of under forecast hub demand. Renominations to reduce supply by just under 3 TJ also had an effect on 27 and 28 December. The increase requirement for the 28 December gas day was especially high, exceeding 10 TJ.

AEMO applied a pipeline flow direction constraint on the Moomba to Adelaide Pipeline (MAP) for the 31 December gas day.[2] This allowed for additional gas to be shipped on the pipeline to supply a higher level of back haul demand outside the hub.[3] A renomination to supply an additional 5 TJ to the hub on MAP and reduce SEAGas supply does not appear to have had a significant effect on the MOS requirement, which was mainly the result of the aggregate forecast error in the hub (see figures 3.3 and 3.4).

[2] The PFDC price for additional gas deliveries was $0.33/GJ. Net flows to supply gas to the hub were scheduled on the SEAGas pipeline (see figure 3.3), with a total of 5 TJ of supply scheduled on the MAP catering for the scheduled backhaul on the pipeline.

[3] The pipeline flow direction constraint price is the additional cost for gas above the ex ante market price where further gas can be economically delivered (based on the bids and offers available on the gas day). This mechanism is explained in more detail in the Gas Report for the week of 31 August 2014.

27 December 2015 – 2 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 price[4] which is the schedule at which most gas is traded.

The main drivers[5] 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[6], 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

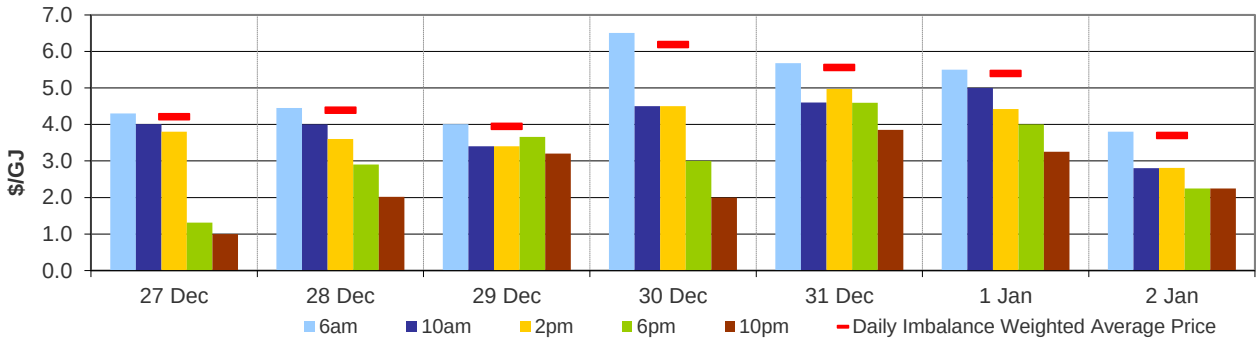
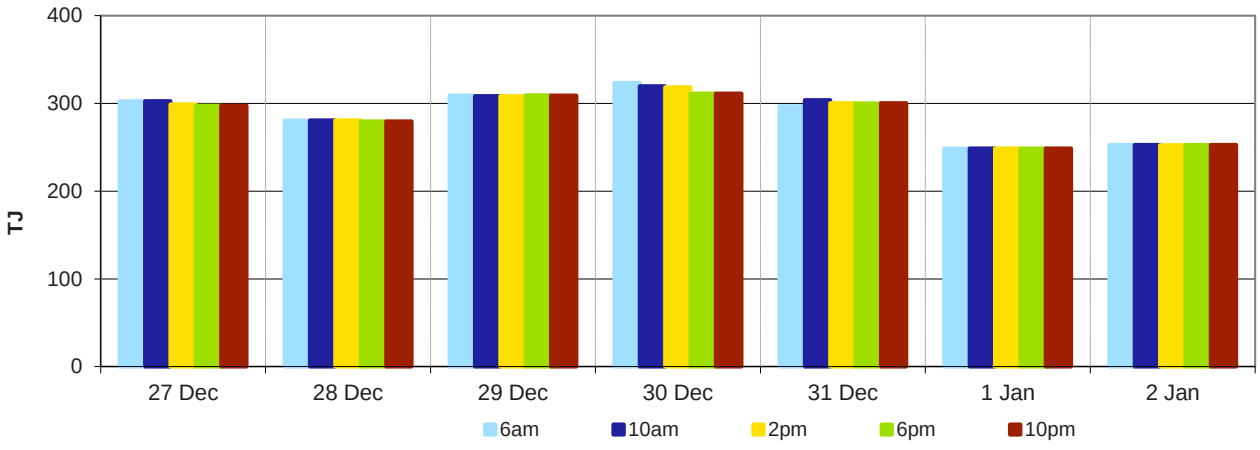


Figure 1.2: Demand forecasts



4 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.

5 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.

6 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

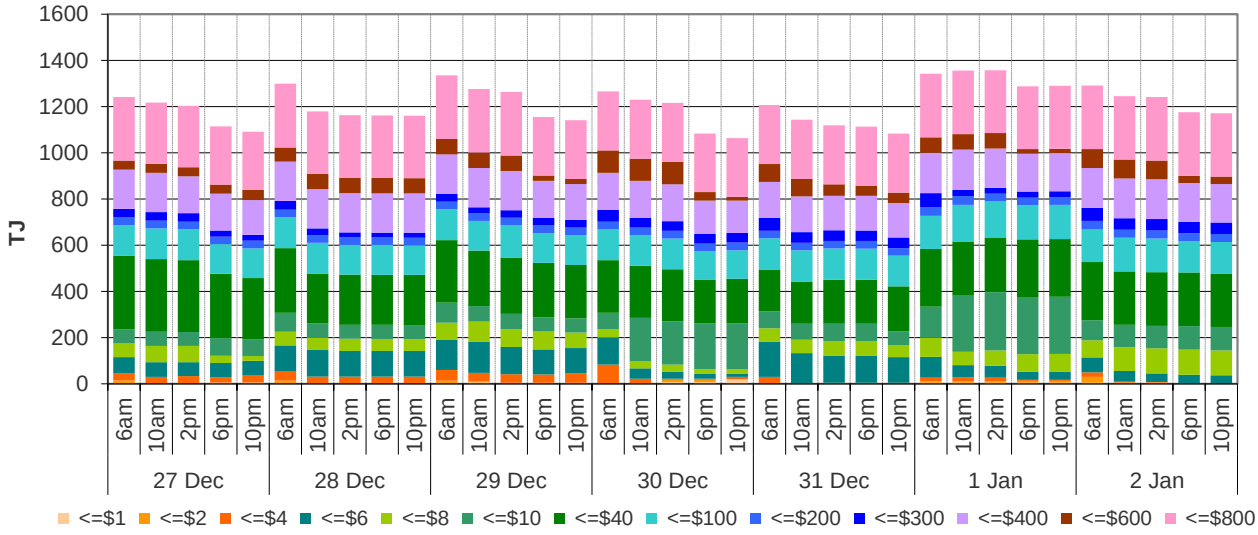


Figure 1.4: Withdrawal bids by price bands

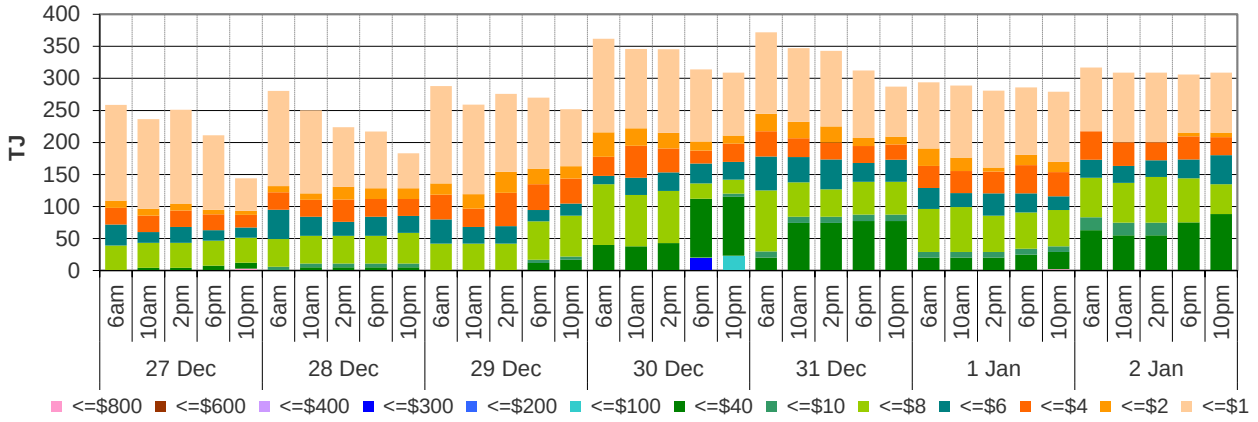
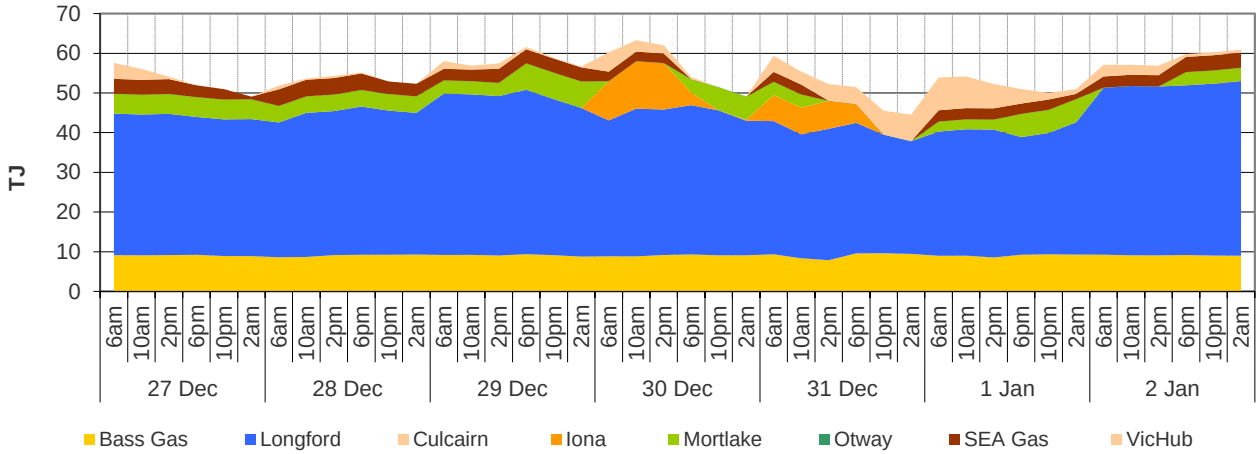


Figure 1.5: Metered Injections by System Injection Point



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.[7] 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.

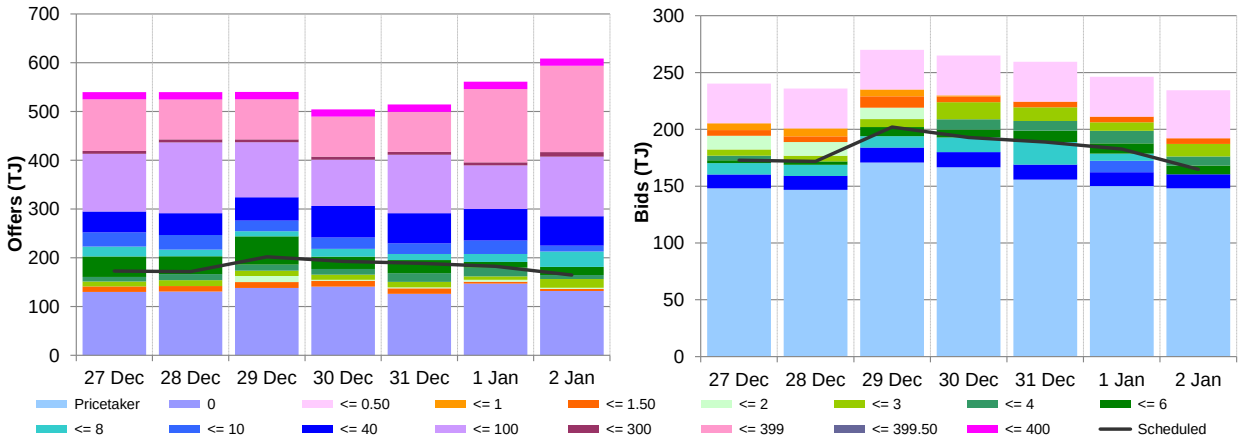
Market Operator Service balancing gas (MOS) payments arise because the amount of gas nominated on pipelines for delivery on a gas day will either exceed or fall short, by some amount, of the amount of gas consumed in the hub. In such circumstances, MOS payments are made to participants for providing a service to park gas on a pipeline or to loan gas from a pipeline to the hub.[8]

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 ($/GJ)	5.39	4.78	5.09	5.70	5.95	4.70	4.72
Ex ante quantity (TJ)	173	172	202	193	189	183	165
Ex post price ($/GJ)	5.39	5.42	4.80	5.70	5.95	4.51	4.72
Ex post quantity (TJ)	173	183	197	191	190	177	167

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



[7] 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.

[8] 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)

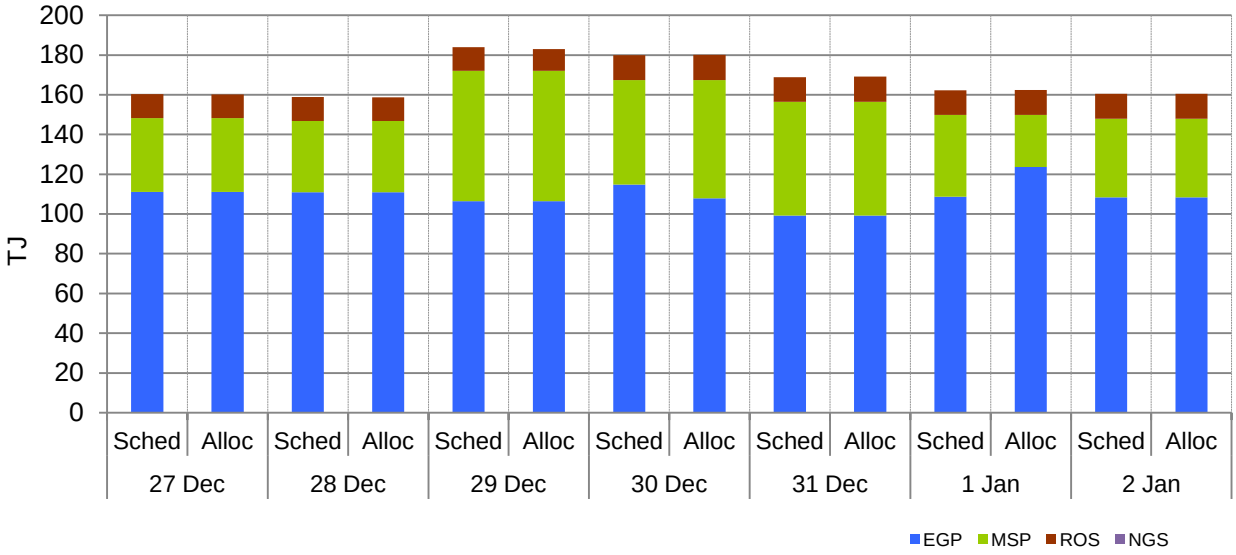
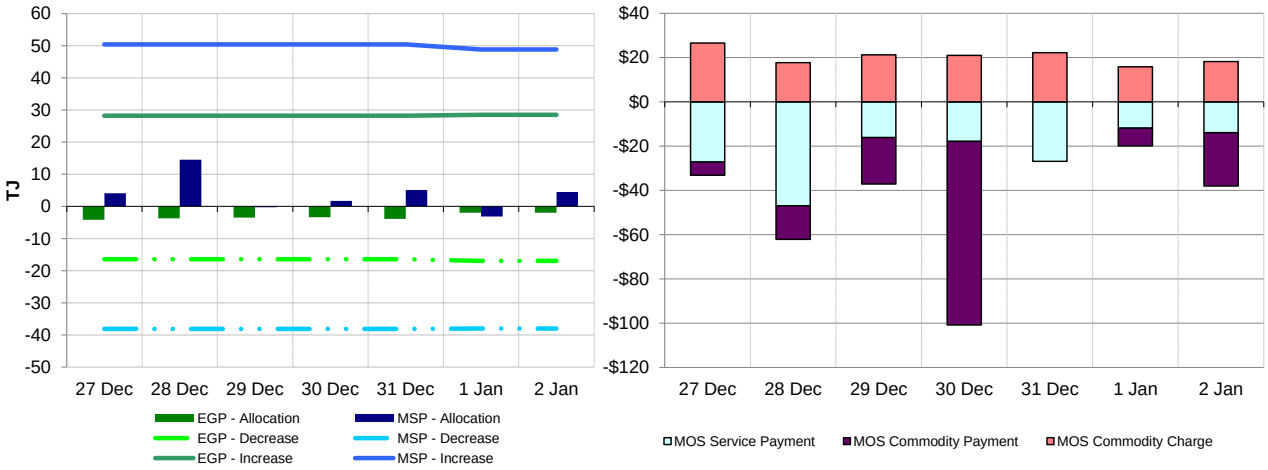


Figure 2.4: SYD MOS allocations (TJ), service payments and commodity payments/charges ($000)



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 ($/GJ)	4.87	4.60	4.60	6.30	6.99	6.37	5.23
Ex ante quantity (TJ)	40	40	45	39	44	35	36
Ex post price ($/GJ)	4.87	4.85	5.40	6.99	6.32	6.37	5.23
Ex post quantity (TJ)	39	45	56	44	40	35	36

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

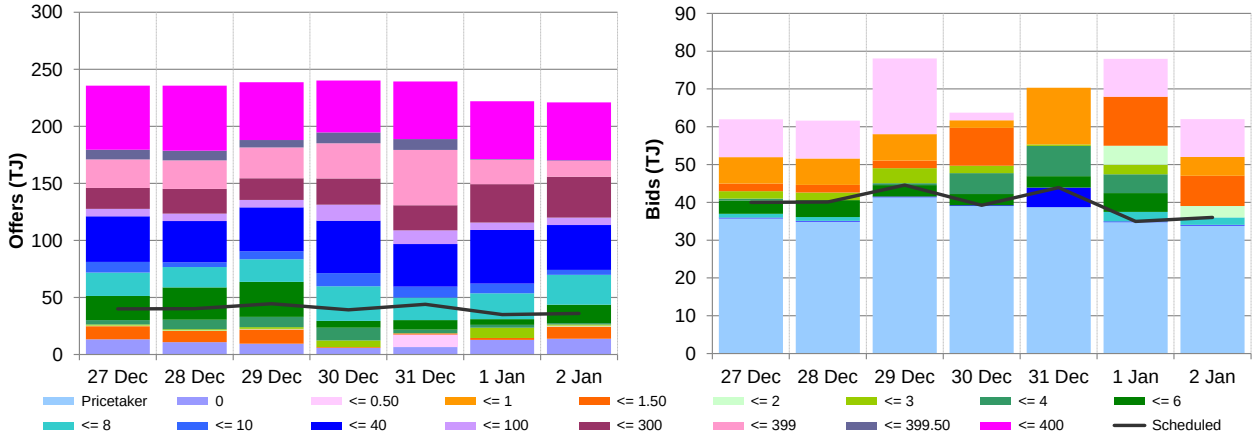


Figure 3.3: ADL net scheduled and allocated gas hub supply (excluding MOS)

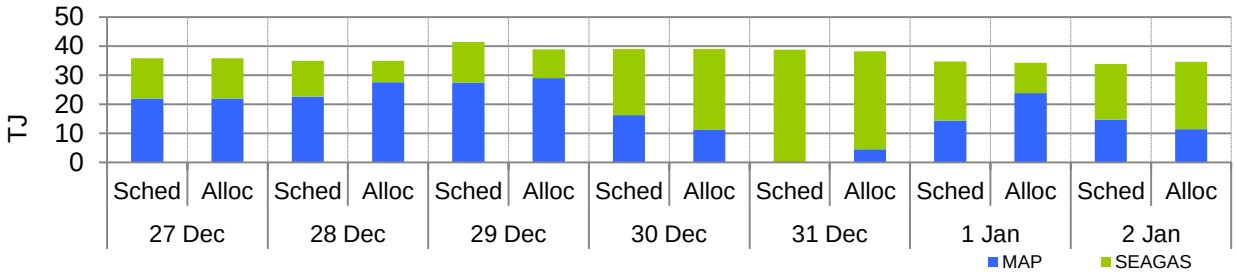
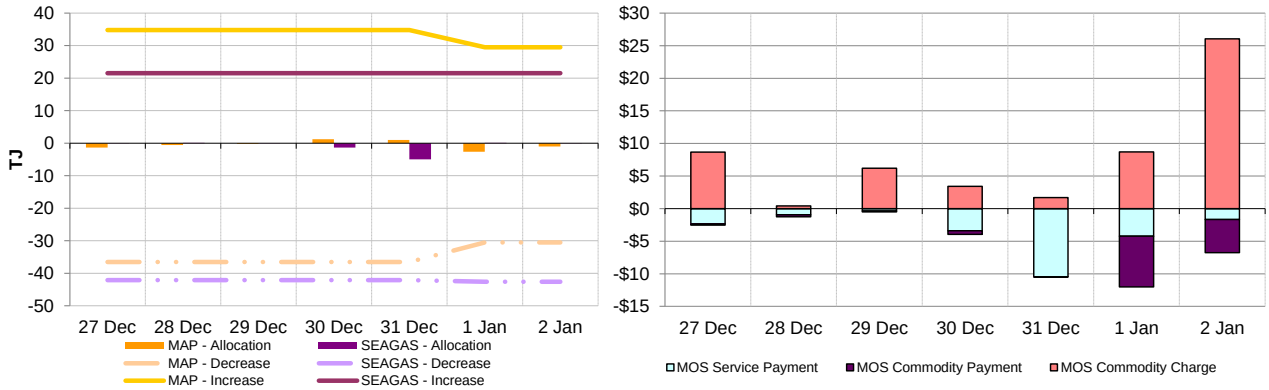


Figure 3.4: ADL MOS allocations (TJ), service payments and commodity payments/charges ($000)



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 ($/GJ)	3.48	2.14	3.68	5.90	5.90	5.51	5.44
Ex ante quantity (TJ)	67	65	76	78	76	70	70
Ex post price ($/GJ)	3.70	3.70	3.80	5.51	5.45	5.45	3.97
Ex post quantity (TJ)	69	73	80	77	73	68	67

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

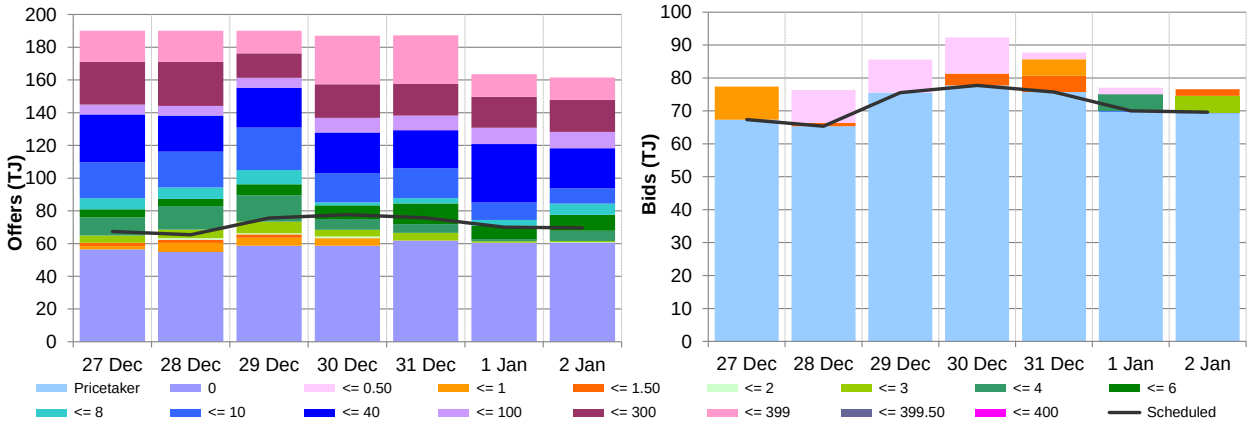


Figure 4.3: BRI net scheduled and allocated gas hub supply (excluding MOS)

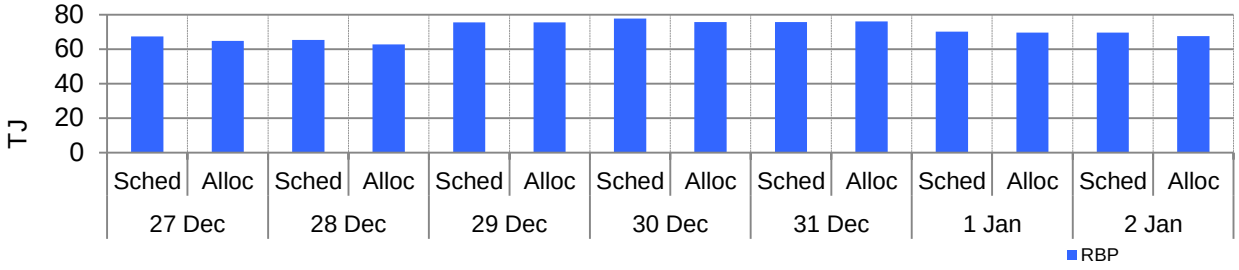
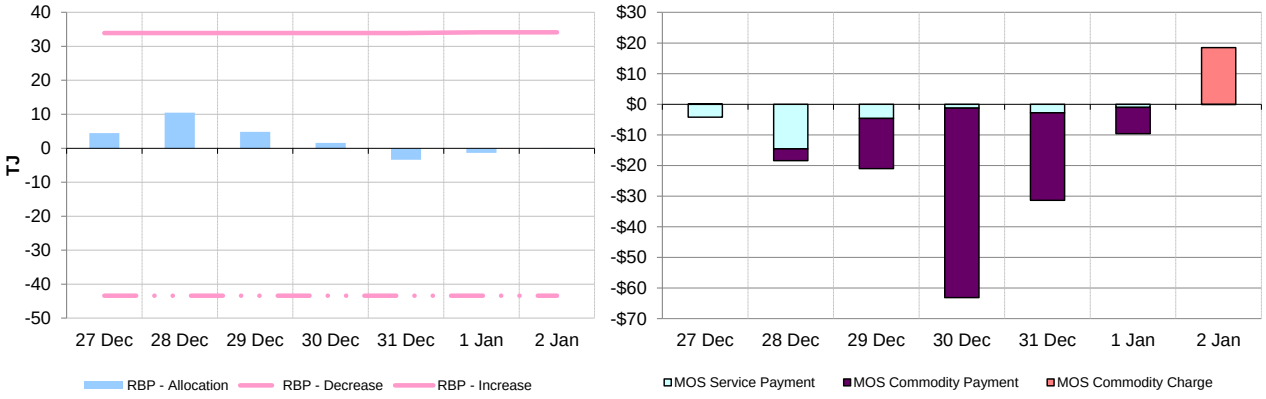


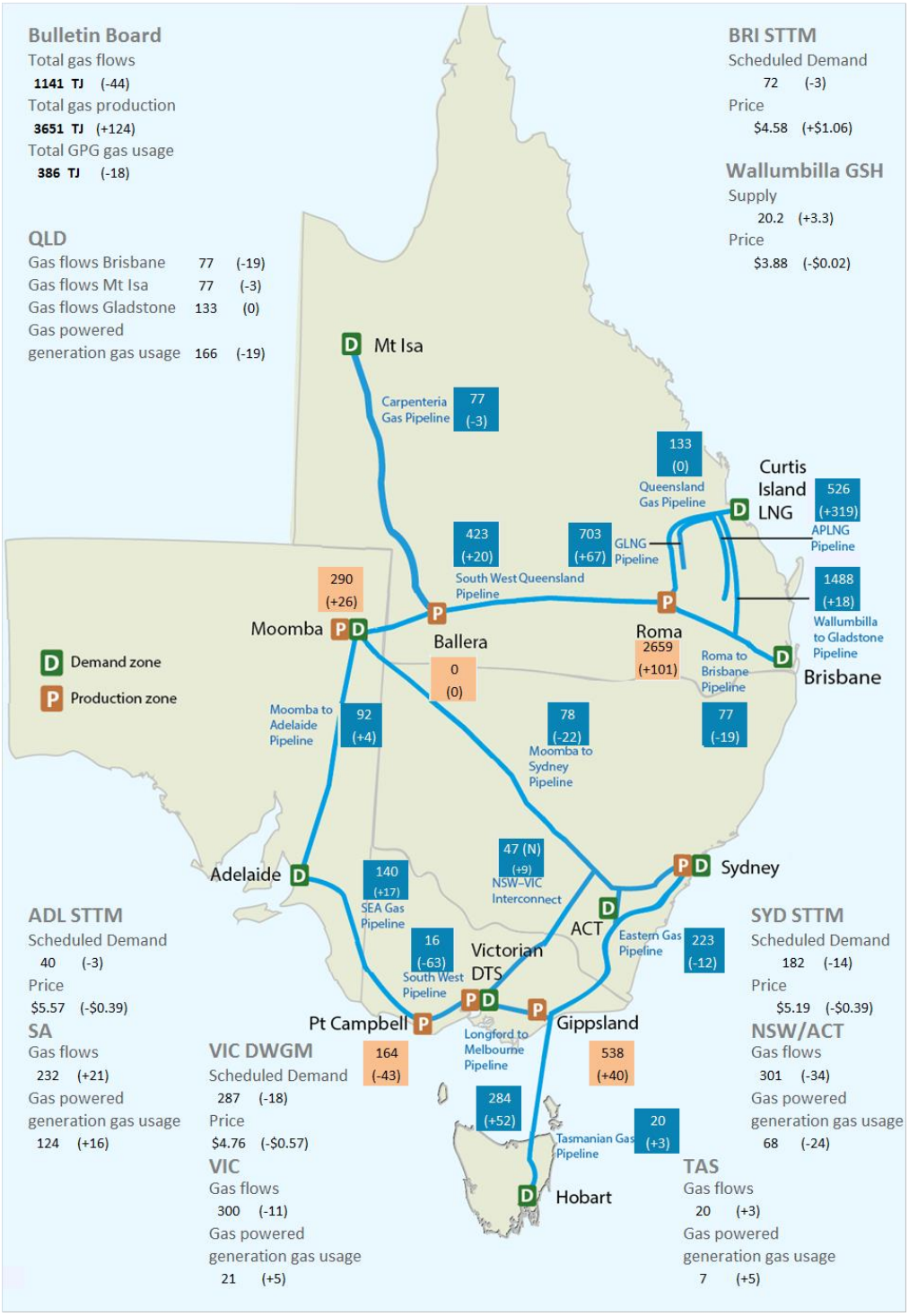
Figure 4.4: BRI MOS allocations (TJ), service payments and commodity payments/charges ($000)



5. National Gas Bulletin Board

Figure 5.1 shows average daily actual flows for the current week[9] from the Bulletin Board (changes from the previous week's average are shown in brackets). Average daily scheduled volumes and prices[10] 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)



9 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.

10 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.

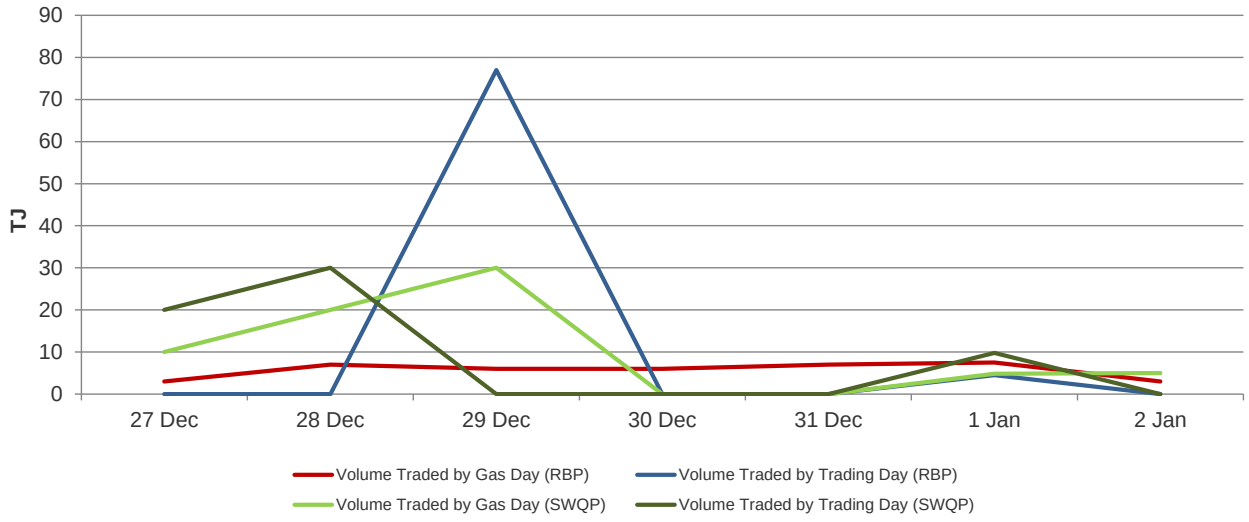
6. Gas Supply Hub

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 market[11] 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 11 trades for 141 TJ of gas this week at a volume weighted price of $3.88/GJ. The volume traded on the RBP was largely comprised of two weekly products trading 70 TJ of gas with only 11.5 TJ traded on other products. The volume traded on the SWQP was mostly through daily products trading 55 TJ of gas, with further trading of balance-of-day gas only around 5 TJ. Volume weighted prices on each pipeline were $4.11/GJ for the RBP and $3.57/GJ for the SWQP.

Figure 6.1 shows volumes traded[12] on each gas day and trading day for the current week.

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



[11] 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.

[12] Volumes shown for weekly products include the 'daily' volume for each relevant 'gas day', and the 'weekly' volume for each relevant 'trading day'.