MOS ESTIMATES REPORT: MOS PERIODS: SEPTEMBER 2016, OCTOBER 2016 & NOVEMBER 2016

Prepared By: Gas System Operations

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1. Introduction

MOS (Market Operator Service) estimates provide a guide of the largest daily increase and decrease MOS quantities that market participants may reasonably expect for each STTM pipeline. The MOS estimate is based on historical data and therefore does not limit the quantity of MOS that may be experienced in the future.

The MOS estimates also determine the value of any overrun MOS. If the MOS estimate (increase or decrease) for an STTM pipeline exceeds the total quantity of MOS offered for that pipeline (increase or decrease respectively), then any overrun MOS is paid at the weighted average price within the relevant MOS stack. Otherwise, if the total quantity of MOS offered for an STTM pipeline exceeds the MOS estimate then overrun MOS is paid at the highest priced offer within the stack.

In accordance with rule 397 of the National Gas Rules (STTM Rules), AEMO publishes MOS increase and decrease estimates for each STTM pipeline prior to the commencement of each monthly MOS period. In determining the MOS estimates for each MOS period, AEMO must use the data specified in Section 5.2 (b) of the STTM Procedures.

2. The MOS period

MOS periods are defined in section 5.1 of the STTM Procedures. The MOS estimates contained in this document relate to MOS periods: September 2016, October 2016 and November 2016.

The MOS quantities for each STTM pipeline and each gas day are as determined in accordance with the published methodology for determining MOS estimates.[1]

Sydney and Adelaide hubs

The Sydney and Adelaide STTM hubs commenced operations on 1 September 2010. The MOS quantities for these periods are based on 'Method 3' for after year 6 of an STTM hub.[2] This means they are derived using the actual daily MOS allocation quantities for the month of September from 2011 to 2015, October from 2011 to 2015; and November from 2011 to 2015; for the following STTM pipelines:

- Moomba to Sydney Pipeline (MSP) and Eastern Gas Pipeline (EGP) – these supply gas to the Sydney STTM hub; and
- Moomba to Adelaide Pipeline (MAP) and SEA Gas pipeline (SEA) – these supply gas to the Adelaide STTM hub.

The input data collected from previous years was combined to create a larger and more representative sample of MOS allocations.

Brisbane hub

The Brisbane STTM hub commenced operations on 1 December 2011. The MOS quantities for this period are based on 'Method 2' for year 3 to year 6 of an STTM hub.[3] This means MOS estimates

[1] Available at: http://www.aemo.com.au/en/Gas/Wholesale-Gas-Markets/Short-Term-Trading-Market/Market-Operator-Service-MOS.

[2] *Methodology for determining MOS estimates v3.0,* 2014; p.22.

[3] *Methodology for determining MOS estimates v3.0,* 2014; p.18.

for the upcoming MOS period for the Roma to Brisbane Pipeline (RBP), the sole pipeline that supplies gas to the Brisbane STTM hub are derived using the actual daily MOS allocation quantities for the month of September from 2012 to 2015; October from 2012 to 2015; and November from 2012 to 2015.

Explanation of MOS quantities and summary statistics

Positive MOS quantities indicate the requirements for increase MOS, whereas negative MOS quantities indicate the requirements for decrease MOS.[4]

STTM Rule 397(1)(a) requires AEMO to publish its estimate of the maximum quantity of MOS (by way of increase and decrease) likely to be required on any gas day in the relevant MOS period. This is provided in Table 1 below.

STTM Rule 397(1)(b) requires AEMO to publish its estimate of the range of daily quantities of MOS likely to be required, together with the number of gas days in the MOS period to which each of those estimated quantities applies. This is provided in the following tables and charts:

- Table 2 shows summary statistics of MOS quantity distributions, including the means, standard deviations, 5 and 95 percentile of the distributions, range and inter-quartile range,[5] and the proportions of days in the MOS period with positive and negative MOS quantities.
- Table 3 shows the daily MOS quantities sorted in descending order and the number of day(s) associated with each estimated quantity.
- Figure 1 displays the curves of daily MOS quantities sorted in descending order from the highest to the lowest values.
- Figure 2 shows the Box plots which provide a graphical summary of the data and are useful tools for comparing the MOS increase and decrease quantities of the different STTM pipelines.

[4] Note MOS increase and decrease offers must comply with the requirements in section 5.4(b)(ii) and section 5.4(c)(ii) of the STTM Procedures, and should be greater than zero for the purpose of creating the MOS stacks.

[5] The inter-quartile range is the range of values between the first (25%) and third quartiles (75%) of the distributions.

MOS Period September 2016

Table 1 – Maximum MOS quantities (GJ)

	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
MOS increase	**25,212**	**10,121**	**12,028**	**196**	**6,739**
MOS decrease	**22,495**	**4,649**	**11,397**	**17,616**	**10,035**

Figure 1 – Curves of daily MOS quantities

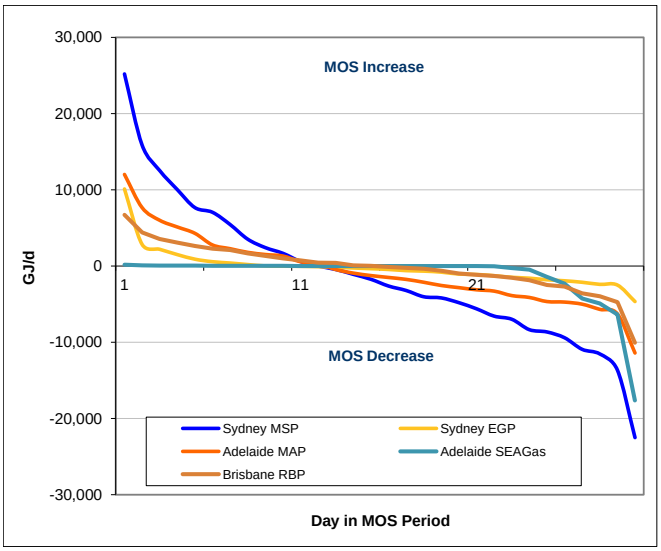

Table 2 – Summary statistics of daily MOS quantities

	Summary statistics GJ/d				
	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
Maximum	25,212	10,121	12,028	196	6,739
95%	14,377	2,565	6,928	88	4,029
75%	3,258	162	1,735	40	1,587
50%	-2,170	-386	-1,364	1	-29
25%	-6,868	-1,414	-3,719	-184	-1,465
5%	-12,683	-2,442	-5,999	-5,706	-4,376
Minimum	-22,495	-4,649	-11,397	-17,616	-10,035
Mean	-1,133	-209	-654	-1,228	-162
Std deviation	9,550	2,443	4,703	3,501	3,132
% days positive	40%	30%	40%	57%	50%
% days negative	60%	70%	60%	43%	50%

Figure 2 – Distribution of daily MOS quantities

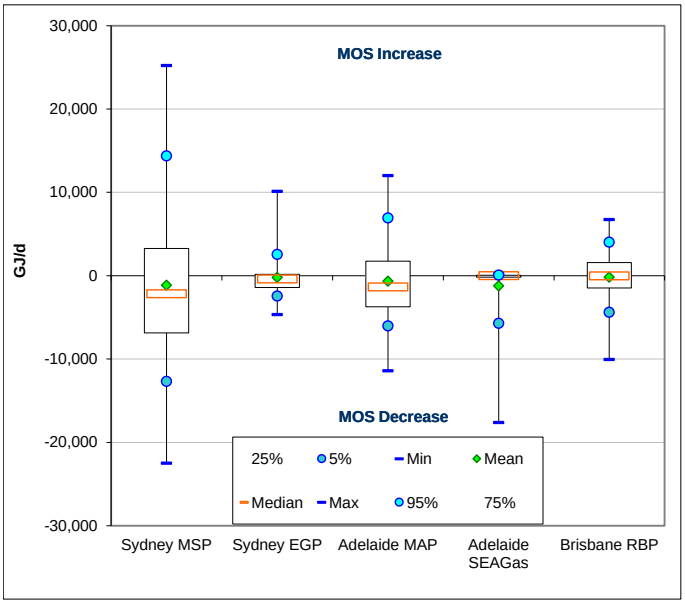

Table 3 – Daily MOS quantities (GJ/d) for September 2016

No of days	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
1	25,212	10,121	12,028	196	6,739
1	15,882	2,856	7,677	94	4,416
1	12,537	2,209	6,013	80	3,557
1	10,038	1,514	5,133	61	3,085
1	7,678	910	4,303	59	2,654
1	7,063	578	2,776	52	2,294
1	5,457	405	2,287	47	2,103
1	3,534	206	1,805	41	1,669
1	2,428	28	1,523	36	1,342
1	1,680	-8	1,322	28	1,026
1	610	-24	574	24	741
1	12	-71	299	16	446
1	-437	-150	-447	7	411
1	-1,075	-246	-917	4	102
1	-1,728	-335	-1,240	2	36
1	-2,611	-437	-1,488	0	-94
1	-3,196	-591	-1,738	0	-230
1	-4,017	-656	-2,116	-1	-330
1	-4,173	-789	-2,540	-1	-624
1	-4,797	-1,045	-2,825	-3	-970
1	-5,600	-1,094	-3,105	-3	-1,150
1	-6,562	-1,256	-3,280	-5	-1,282
1	-6,970	-1,467	-3,865	-243	-1,526
1	-8,338	-1,580	-4,111	-472	-1,858
1	-8,638	-1,792	-4,647	-1,398	-2,465
1	-9,399	-1,924	-4,716	-2,311	-2,669
1	-10,920	-2,120	-4,994	-4,258	-3,571
1	-11,520	-2,392	-5,671	-4,906	-3,952
1	-13,635	-2,484	-6,268	-6,361	-4,723
1	-22,495	-4,649	-11,397	-17,616	-10,035

MOS Period October 2016

Table 1 – Maximum MOS quantities (GJ)

	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
MOS increase	19,702	4,277	6,361	564	8,538
MOS decrease	31,169	4,299	9,182	17,065	14,142

Figure 1 – Curves of daily MOS quantities

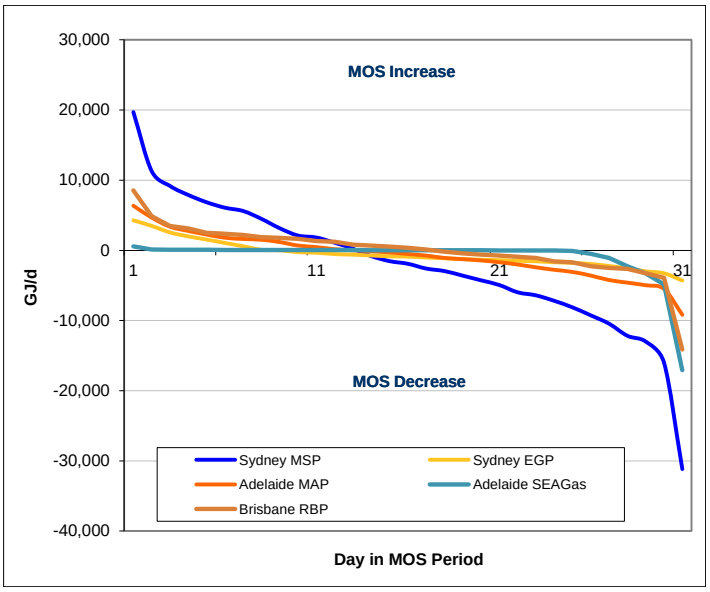

Table 2 – Summary statistics of daily MOS quantities

	Summary statistics GJ/d				
	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
Maximum	19,702	4,277	6,361	564	8,538
95%	10,234	3,020	4,021	116	4,172
75%	3,816	39	1,347	58	1,826
50%	-1,913	-891	-514	18	370
25%	-6,800	-1,627	-2,596	-7	-1,326
5%	-14,502	-3,132	-5,238	-4,072	-3,604
Minimum	-31,169	-4,299	-9,182	-17,065	-14,142
Mean	-2,030	-599	-731	-894	46
Std deviation	9,489	1,899	3,199	3,203	3,662
% days positive	42%	29%	42%	68%	55%
% days negative	58%	71%	58%	32%	45%

Figure 2 – Distribution of daily MOS quantities

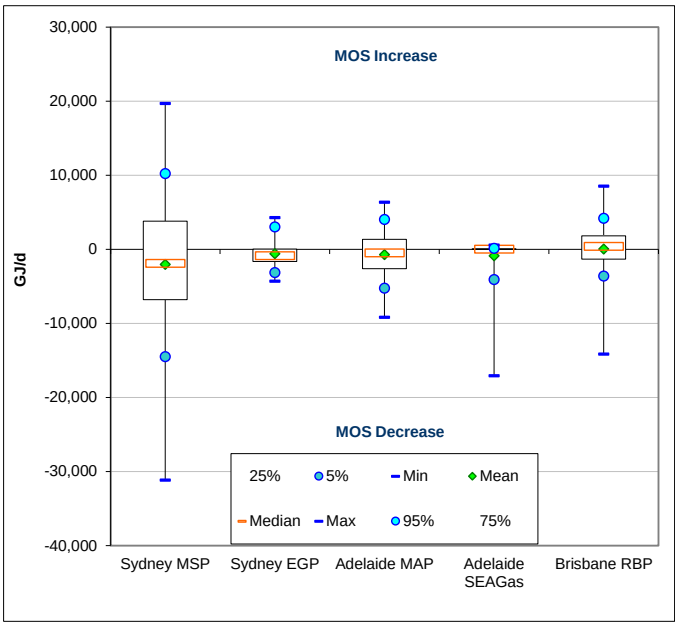

Table 3 – Daily MOS quantities (GJ/d) for October 2016

No of days	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
1	19,702	4,277	6,361	564	8,538
1	11,293	3,486	4,669	136	4,879
1	9,174	2,553	3,372	96	3,464
1	7,892	1,990	2,766	85	3,129
1	6,853	1,539	2,254	78	2,510
1	6,079	1,059	1,799	69	2,368
1	5,607	584	1,619	65	2,175
1	4,485	75	1,511	62	1,876
1	3,147	3	1,183	53	1,775
1	2,109	-254	684	50	1,645
1	1,830	-338	467	46	1,343
1	1,088	-532	166	40	1,218
1	233	-610	9	35	826
1	-824	-731	-140	25	660
1	-1,537	-849	-296	20	543
1	-1,913	-891	-514	18	370
1	-2,591	-1,017	-745	11	114
1	-2,952	-1,130	-1,082	7	-200
1	-3,605	-1,238	-1,259	4	-415
1	-4,271	-1,338	-1,438	1	-609
1	-4,941	-1,395	-1,694	0	-748
1	-5,979	-1,481	-2,012	-2	-914
1	-6,410	-1,554	-2,418	-6	-1,093
1	-7,190	-1,700	-2,773	-8	-1,559
1	-8,125	-1,780	-3,073	-81	-1,704
1	-9,267	-1,941	-3,599	-497	-2,244
1	-10,455	-2,233	-4,230	-1,094	-2,509
1	-12,177	-2,560	-4,601	-2,271	-2,657
1	-13,000	-2,994	-4,973	-3,301	-3,274
1	-16,003	-3,269	-5,502	-4,843	-3,934
1	-31,169	-4,299	-9,182	-17,065	-14,142

MOS Period November 2016

Table 1 – Maximum MOS quantities (GJ)

	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
MOS increase	18,367	4,625	8,070	584	13,575
MOS decrease	35,148	3,973	5,440	11,001	5,206

Figure 1 – Curves of daily MOS quantities

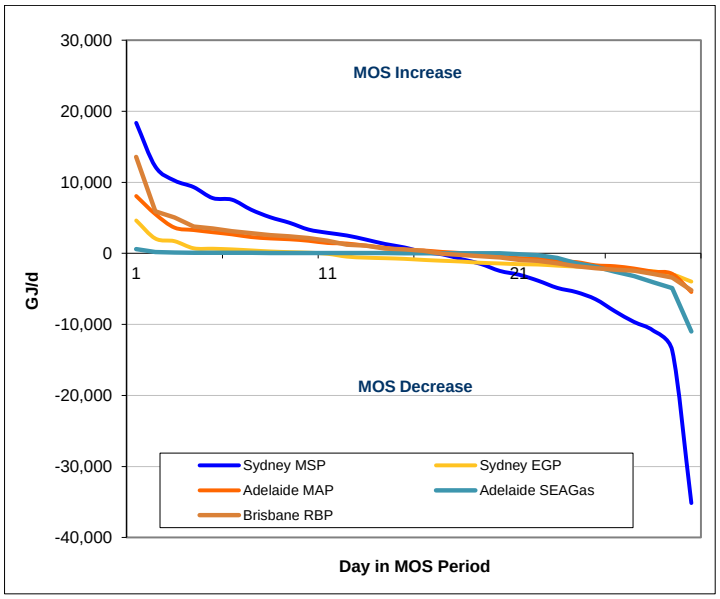

Table 2 – Summary statistics of daily MOS quantities

	Summary statistics GJ/d				
	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
Maximum	18,367	4,625	8,070	584	13,575
95%	11,326	1,916	4,667	141	5,513
75%	4,891	244	2,073	61	2,536
50%	510	-846	447	18	458
25%	-4,612	-1,691	-992	-542	-1,305
5%	-12,400	-2,772	-2,749	-4,521	-3,169
Minimum	-35,148	-3,973	-5,440	-11,001	-5,206
Mean	-399	-661	639	-950	862
Std deviation	9,708	1,685	2,662	2,332	3,527
% days positive	53%	33%	60%	60%	53%
% days negative	47%	67%	40%	40%	47%

Figure 2 – Distribution of daily MOS quantities

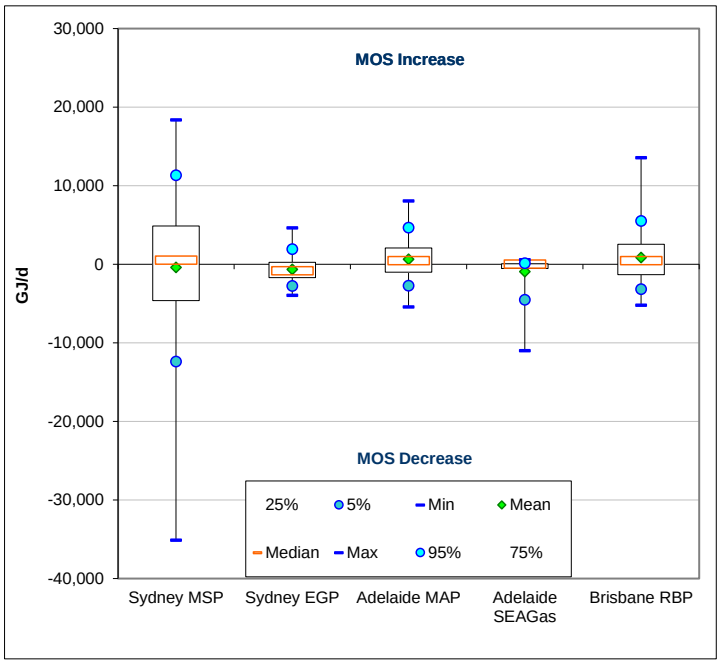

Table 3 – Daily MOS quantities (GJ/d) for November 2016

No of days	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
1	18,367	4,625	8,070	584	13,575
1	12,206	2,084	5,521	169	5,902
1	10,250	1,712	3,624	106	5,037
1	9,323	713	3,283	96	3,775
1	7,775	652	2,972	80	3,515
1	7,554	559	2,676	76	3,130
1	6,149	416	2,296	70	2,843
1	5,085	268	2,102	63	2,580
1	4,310	171	1,984	56	2,403
1	3,351	96	1,773	51	2,160
1	2,892	-62	1,462	43	1,787
1	2,515	-458	1,383	40	1,233
1	1,940	-606	1,078	36	1,066
1	1,319	-681	786	31	671
1	838	-772	486	22	556
1	182	-921	408	14	359
1	-144	-1,044	197	4	-69
1	-820	-1,155	42	0	-230
1	-1,486	-1,328	-222	-3	-390
1	-2,475	-1,420	-466	-4	-566
1	-3,009	-1,524	-672	-108	-916
1	-3,854	-1,573	-789	-255	-1,057
1	-4,864	-1,730	-1,060	-638	-1,388
1	-5,464	-1,862	-1,233	-1,410	-1,803
1	-6,464	-1,959	-1,681	-1,894	-2,083
1	-8,139	-2,148	-1,813	-2,562	-2,286
1	-9,644	-2,412	-2,132	-3,195	-2,450
1	-10,857	-2,537	-2,577	-4,064	-2,876
1	-13,663	-2,964	-2,889	-4,895	-3,409
1	-35,148	-3,973	-5,440	-11,001	-5,206