

# MOS ESTIMATES REPORT: MOS PERIODS; MARCH 2016, APRIL 2016 & MAY 2016

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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 March 2016, April 2016 and May 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.<sup>1</sup>

### Sydney and Adelaide hubs

The MOS quantities for these periods are based on 'Method 3'.<sup>2</sup> This means they are derived using the actual daily MOS allocation quantities for the periods March 2011, 2012, 2013, 2014, 2015; April 2011, 2012, 2013, 2014, 2015; and May 2011, 2012, 2013, 2014, 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 the previous years was combined to create a larger and more representative sample of MOS allocations, as stated under Method 2 in the methodology.

### Brisbane hub

The Brisbane STTM hub commenced operations on 1 December 2011. Therefore The MOS quantities for this period are based on 'Method 2' for year 3 to year 6 of an STTM hub.<sup>3</sup> This means MOS estimates for the upcoming MOS period for the Roma to Brisbane Pipeline (RBP), the sole

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

<sup>2</sup> *Methodology for determining MOS estimates v2.0*, 2011; p.22.

<sup>3</sup> *Methodology for determining MOS estimates v2.0*, 2011; p.18.

pipeline that supplies gas to the Brisbane STTM hub are derived using the actual daily MOS allocation quantities for the periods March 2012, 2013, 2014, 2015; April 2012, 2013, 2014, 2015; and May 2012, 2013, 2014, 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.<sup>4</sup>

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,<sup>5</sup> 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.

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<sup>4</sup> 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.

<sup>5</sup> The inter-quartile range is the range of values between the first (25%) and third quartiles (75%) of the distributions.

MOS Period March 2016

Table 1 – Maximum MOS quantities (GJ)

	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
MOS increase	18,174	2,275	7,800	846	8,810
MOS decrease	32,619	13,021	5,950	9,977	10,499

Figure 1 – Curves of daily MOS quantities

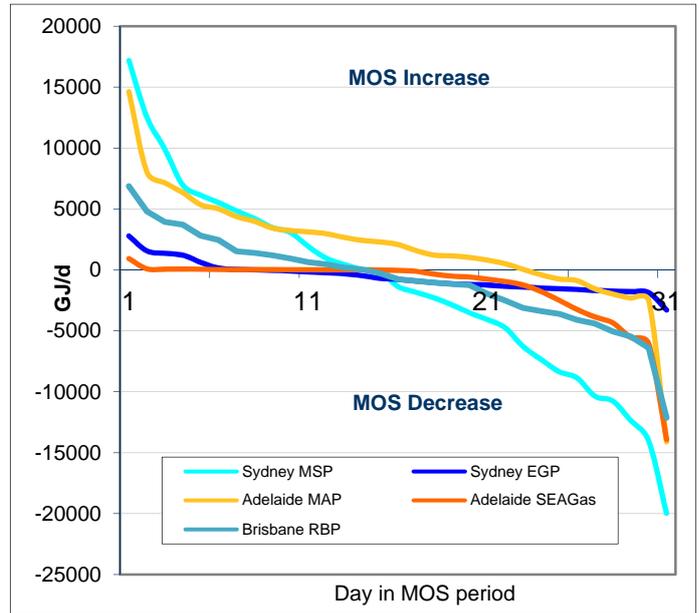


Table 2 – Summary statistics of daily MOS quantities

	Summary statistics GJ/d				
	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
Maximum	18,174	2,275	7,800	846	8,810
95%	11,496	1,663	4,656	102	5,253
75%	2,881	592	2,000	56	2,384
50%	-2,147	-258	145	21	171
25%	-6,713	-819	-1,480	-98	-1,354
5%	-13,379	-1,795	-2,874	-2,928	-6,342
Minimum	-32,619	-13,021	-5,950	-9,977	-10,499
Mean	-2,132	-475	377	-590	171
Std deviation	9,440	2,536	2,783	1,938	3,803
% days positive	39%	39%	52%	58%	55%
% days negative	61%	61%	48%	42%	45%

Figure 2 – Distribution of daily MOS quantities

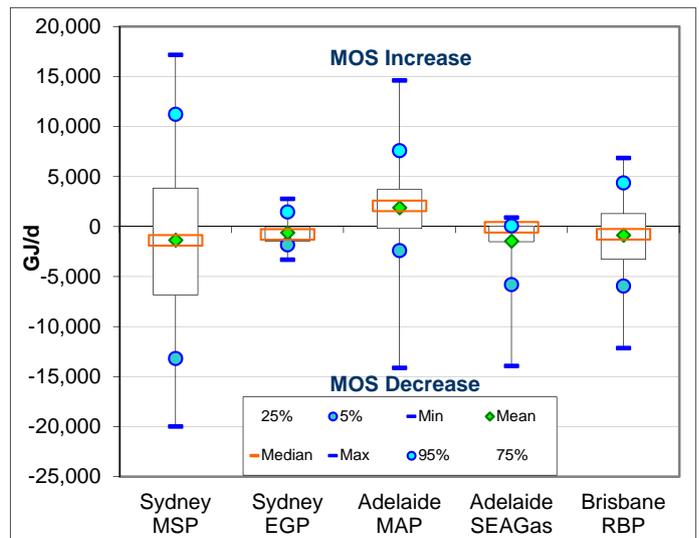


Table 3 – Daily MOS quantities (GJ/d) for March 2016

No of days	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
1	18,174	2,275	7,800	846	8,810
1	12,122	1,751	5,003	110	6,123
1	10,869	1,575	4,308	94	4,382
1	9,442	1,234	3,871	83	4,143
1	6,752	1,105	3,245	75	3,555
1	4,865	1,000	2,997	69	3,049
1	4,141	790	2,589	64	2,632
1	3,029	725	2,452	59	2,458
1	2,732	459	1,547	53	2,309
1	1,912	306	1,230	52	1,960
1	1,447	182	1,104	46	1,716
1	375	57	988	43	1,267
1	-386	-19	782	38	1,141
1	-939	-125	565	33	919
1	-1,820	-167	248	29	716
1	-2,147	-258	145	21	171
1	-2,871	-329	-105	5	65
1	-3,307	-369	-319	1	-236
1	-4,038	-414	-547	-1	-333
1	-4,307	-580	-789	-1	-483
1	-4,833	-644	-1,190	-4	-679
1	-5,245	-688	-1,333	-7	-1,049
1	-5,918	-789	-1,454	-66	-1,163
1	-7,507	-850	-1,506	-130	-1,544
1	-8,494	-933	-1,693	-294	-1,867
1	-9,138	-1,014	-1,924	-438	-2,486
1	-10,171	-1,102	-2,107	-1,198	-3,089
1	-11,439	-1,293	-2,528	-2,028	-3,996
1	-12,050	-1,582	-2,747	-2,685	-5,878
1	-14,708	-2,008	-3,001	-3,170	-6,805
1	-32,619	-13,021	-5,950	-9,977	-10,499

MOS Period April 2016

Table 1 – Maximum MOS quantities (GJ)

	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
MOS increase	20,462	3,794	12,113	133	8,778
MOS decrease	22,008	4,873	11,025	10,688	10,683

Figure 1 – Curves of daily MOS quantities

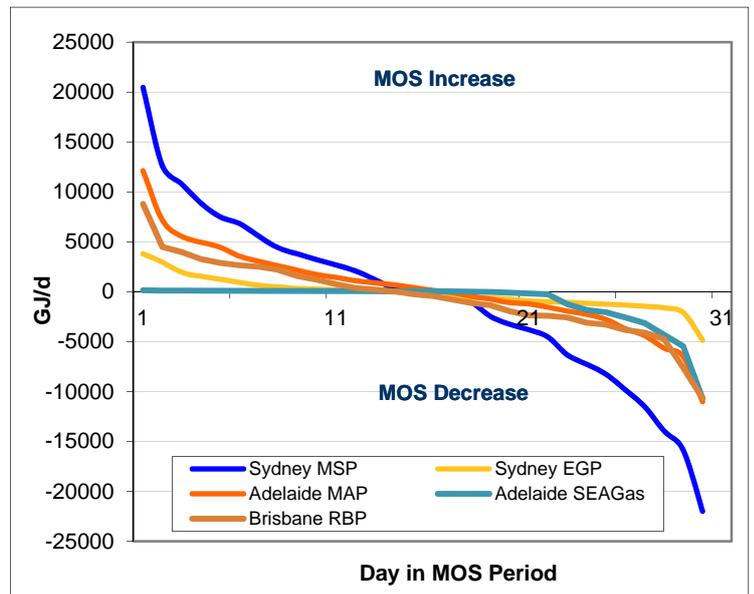


Table 2 – Summary statistics of daily MOS quantities

	Summary statistics GJ/d				
	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
Maximum	20,462	3,794	12,113	133	8,778
95%	11,803	2,506	6,442	104	4,251
75%	4,245	440	2,487	63	2,038
50%	15	-226	276	28	-340
25%	-5,905	-1,071	-1,851	-1,009	-2,545
5%	-15,004	-1,882	-6,128	-4,947	-6,328
Minimum	-22,008	-4,873	-11,025	-10,688	-10,683
Mean	-682	-174	283	-1,027	-527
Std deviation	8,955	1,596	4,409	2,327	3,802
% days positive	50%	43%	53%	60%	47%
% days negative	50%	57%	47%	40%	53%

Figure 2 – Distribution of daily MOS quantities

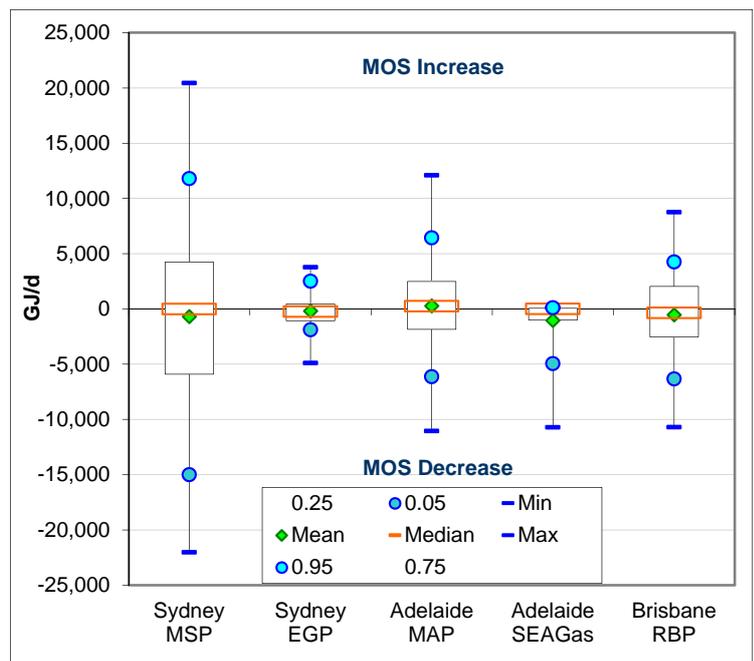


Table 3 – Daily MOS quantities (GJ/d) for April 2016

No of days	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
1	20,462	3,794	12,113	133	8,778
1	12,623	2,966	7,181	106	4,476
1	10,801	1,943	5,539	102	3,975
1	8,867	1,545	4,965	96	3,274
1	7,498	1,251	4,447	90	2,881
1	6,823	918	3,556	86	2,646
1	5,567	635	3,047	75	2,500
1	4,394	480	2,600	65	2,195
1	3,796	319	2,146	58	1,568
1	3,213	258	1,709	57	1,198
1	2,684	175	1,431	53	762
1	2,086	103	1,100	51	371
1	1,229	9	896	45	207
1	354	-13	680	36	40
1	125	-115	420	33	-253
1	-96	-337	132	22	-426
1	-663	-401	-88	19	-779
1	-1,041	-590	-458	0	-1,127
1	-2,460	-632	-742	-26	-1,354
1	-3,262	-741	-1,098	-103	-1,953
1	-3,813	-918	-1,226	-185	-2,378
1	-4,559	-999	-1,565	-274	-2,426
1	-6,353	-1,095	-1,946	-1,254	-2,585
1	-7,277	-1,138	-2,274	-1,839	-3,115
1	-8,283	-1,235	-2,782	-2,056	-3,313
1	-9,828	-1,356	-3,716	-2,594	-3,830
1	-11,515	-1,469	-4,396	-3,140	-4,099
1	-13,946	-1,622	-5,655	-4,319	-4,724
1	-15,870	-2,094	-6,515	-5,460	-7,640
1	-22,008	-4,873	-11,025	-10,688	-10,683

MOS Period May 2016

Table 1 – Maximum MOS quantities (GJ)

	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
MOS increase	22,156	5,770	10,385	346	7,519
MOS decrease	35,576	3,054	5,703	11,922	10,320

Figure 1 – Curves of daily MOS quantities

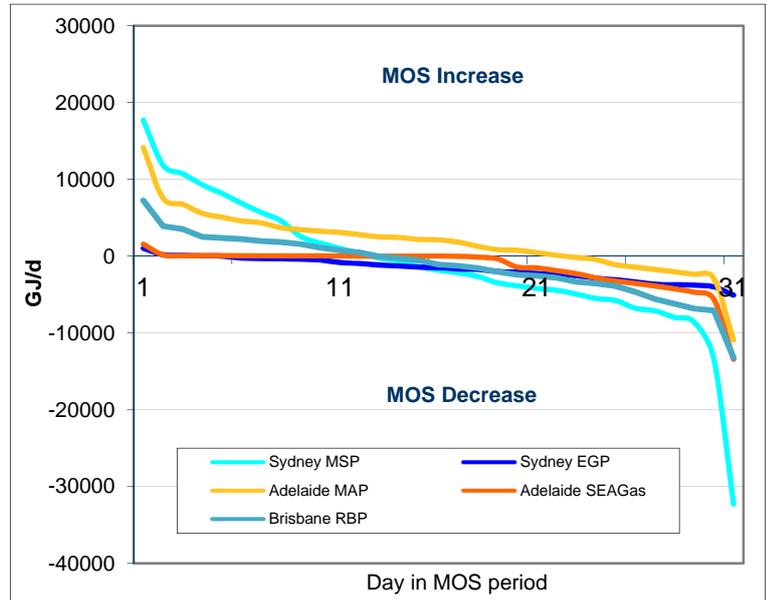


Table 2 – Summary statistics of daily MOS quantities

	Summary statistics GJ/d				
	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
Maximum	22,156	5,770	10,385	346	7,519
95%	11,474	4,248	8,687	103	5,304
75%	5,520	3,052	4,758	53	1,432
50%	597	895	1,520	-5	-652
25%	-4,626	-295	-352	-1,865	-2,401
5%	-13,335	-1,892	-3,135	-7,679	-5,213
Minimum	-35,576	-3,054	-5,703	-11,922	-10,320
Mean	-240	1,197	2,207	-1,590	-391
Std deviation	10,169	2,154	3,845	2,927	3,613
% days positive	52%	65%	71%	48%	45%
% days negative	48%	35%	29%	52%	55%

Figure 2 – Distribution of daily MOS quantities

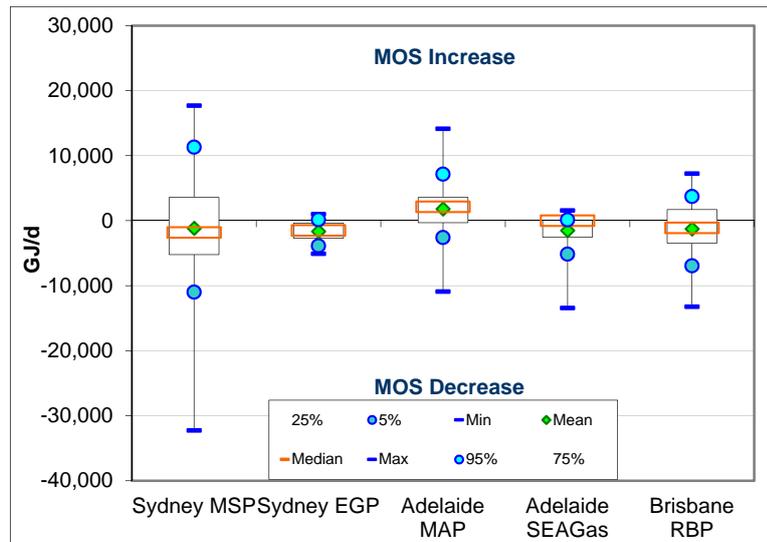


Table 3 – Daily MOS quantities (GJ/d) for May 2016

No of days	Sydney MSP	Sydney EGP	Adelaide MAP	Adelaide SEAGas	Brisbane RBP
1	22,156	5,770	10,385	346	7,519
1	12,579	4,360	9,176	110	5,908
1	10,369	4,135	8,198	95	4,699
1	9,533	3,854	6,997	84	4,059
1	8,540	3,675	6,414	81	3,319
1	7,497	3,520	6,090	68	2,888
1	6,879	3,346	5,595	61	2,053
1	5,724	3,168	5,043	53	1,616
1	5,316	2,936	4,473	52	1,247
1	4,584	2,693	4,165	47	1,196
1	3,582	2,322	3,822	44	1,011
1	3,258	1,957	3,520	39	740
1	2,288	1,604	2,982	33	352
1	1,895	1,388	2,553	29	207
1	1,321	1,063	1,973	13	-200
1	597	895	1,520	-5	-652
1	-155	675	1,330	-271	-950
1	-658	422	1,096	-403	-1,257
1	-1,312	158	701	-537	-1,363
1	-2,005	10	441	-664	-1,501
1	-2,620	-23	264	-923	-1,656
1	-3,200	-85	111	-1,173	-1,880
1	-4,191	-208	-257	-1,562	-2,117
1	-5,061	-381	-446	-2,167	-2,684
1	-6,681	-471	-912	-2,671	-2,858
1	-7,619	-518	-1,196	-3,214	-3,272
1	-8,547	-938	-1,527	-4,247	-3,500
1	-9,253	-1,383	-2,114	-5,330	-4,295
1	-10,651	-1,723	-2,856	-6,979	-4,983
1	-16,019	-2,061	-3,414	-8,378	-5,443
1	-35,576	-3,054	-5,703	-11,922	-10,320