

# MOS ESTIMATES REPORT: MOS PERIODS MARCH 2017, APRIL 2017 & MAY 2017

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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 2017, April 2017 and May 2017.

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, Adelaide and Brisbane hubs

The Sydney and Adelaide STTM hubs commenced operations on 1 September 2010, while the Brisbane STTM hub commenced operations on 1 December 2011. Therefore the MOS estimate quantities are based on 'Method 3' for year 6 + of an STTM hub.<sup>2</sup> This means they are derived using the actual daily MOS allocation quantities for the periods March from 2012 to 2016; April from 2012 to 2016; and May from 2012 to 2016; for the following STTM pipelines:

- Moomba to Sydney Pipeline (MSP) and Eastern Gas Pipeline (EGP) – these pipelines supply gas to the Sydney STTM hub; and
- Moomba to Adelaide Pipeline (MAP) and SEA Gas pipeline (SEA) – these pipelines supply gas to the Adelaide STTM hub.
- Roma to Brisbane Pipeline (RBP) – the sole pipeline that supplies gas to the Brisbane STTM hub.

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

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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, pg 22*

## 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>3</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>4</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>3</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>4</sup> The inter-quartile range is the range of values between the first (25%) and third quartiles (75%) of the distributions.

### MOS Period March 2017

Table 1 – Maximum MOS quantities (GJ)

|                     | Sydney MSP    | Sydney EGP    | Adelaide MAP  | Adelaide SEAGas | Brisbane RBP  |
|---------------------|---------------|---------------|---------------|-----------------|---------------|
| <b>MOS increase</b> | <b>18,174</b> | <b>2,571</b>  | <b>11,641</b> | <b>846</b>      | <b>8,810</b>  |
| <b>MOS decrease</b> | <b>32,530</b> | <b>16,360</b> | <b>7,184</b>  | <b>9,977</b>    | <b>10,499</b> |

Figure 1 – Curves of daily MOS quantities

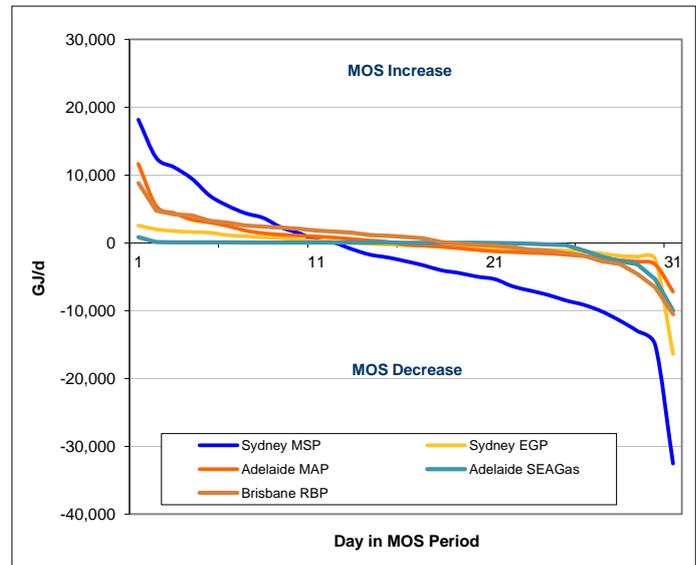


Table 2 – Summary statistics of daily MOS quantities

|                 | Summary statistics GJ/d |            |              |                 |              |
|-----------------|-------------------------|------------|--------------|-----------------|--------------|
|                 | Sydney MSP              | Sydney EGP | Adelaide MAP | Adelaide SEAGas | Brisbane RBP |
| Maximum         | 18,174                  | 2,571      | 11,641       | 846             | 8,810        |
| 95%             | 11,861                  | 1,876      | 4,923        | 103             | 4,489        |
| 75%             | 2,999                   | 770        | 1,323        | 65              | 2,331        |
| 50%             | -2,699                  | -329       | -260         | 33              | 878          |
| 25%             | -7,362                  | -992       | -1,500       | -179            | -1,087       |
| 5%              | -14,024                 | -2,238     | -2,964       | -4,255          | -5,553       |
| Minimum         | -32,530                 | -16,360    | -7,184       | -9,977          | -10,499      |
| Mean            | -2,400                  | -624       | 278          | -748            | 382          |
| Std deviation   | 9,575                   | 3,173      | 3,250        | 2,116           | 3,574        |
| % days positive | 39%                     | 42%        | 48%          | 65%             | 58%          |
| % days negative | 61%                     | 58%        | 52%          | 35%             | 42%          |

Figure 2 – Distribution of daily MOS quantities

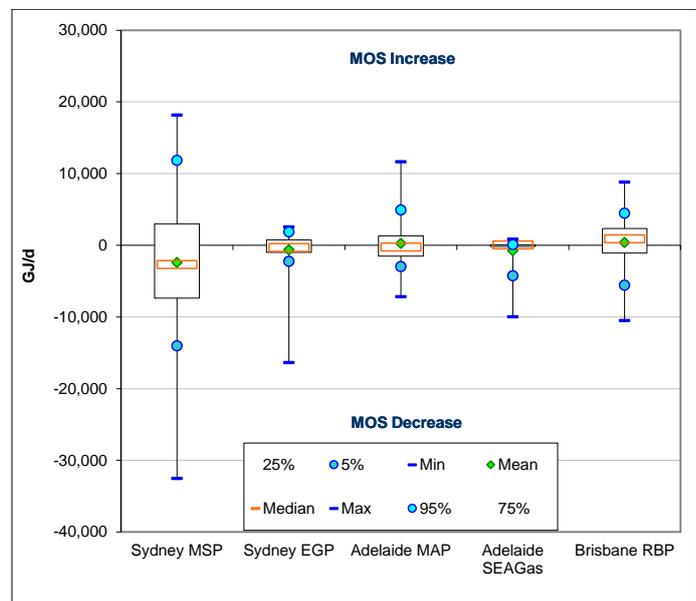


Table 3 – Daily MOS quantities (GJ/d) for March 2017

| No of days | Sydney MSP | Sydney EGP | Adelaide MAP | Adelaide SEAGas | Brisbane RBP |
|------------|------------|------------|--------------|-----------------|--------------|
| 1          | 18,174     | 2,571      | 11,641       | 846             | 8,810        |
| 1          | 12,556     | 2,000      | 5,445        | 110             | 4,756        |
| 1          | 11,165     | 1,751      | 4,400        | 95              | 4,222        |
| 1          | 9,473      | 1,603      | 3,429        | 86              | 4,059        |
| 1          | 6,972      | 1,517      | 3,021        | 77              | 3,278        |
| 1          | 5,494      | 1,138      | 2,511        | 74              | 2,990        |
| 1          | 4,383      | 1,000      | 1,827        | 69              | 2,584        |
| 1          | 3,699      | 816        | 1,417        | 68              | 2,411        |
| 1          | 2,298      | 725        | 1,229        | 61              | 2,251        |
| 1          | 1,447      | 459        | 1,079        | 55              | 2,086        |
| 1          | 410        | 306        | 947          | 52              | 1,814        |
| 1          | 15         | 166        | 782          | 48              | 1,668        |
| 1          | -939       | 10         | 574          | 45              | 1,512        |
| 1          | -1,734     | -125       | 345          | 40              | 1,168        |
| 1          | -2,147     | -245       | 157          | 36              | 1,059        |
| 1          | -2,699     | -329       | -260         | 33              | 878          |
| 1          | -3,307     | -414       | -414         | 28              | 664          |
| 1          | -4,038     | -574       | -551         | 20              | 107          |
| 1          | -4,439     | -651       | -784         | 12              | -119         |
| 1          | -4,971     | -716       | -1,042       | 1               | -306         |
| 1          | -5,346     | -789       | -1,248       | -6              | -408         |
| 1          | -6,401     | -850       | -1,342       | -43             | -652         |
| 1          | -7,043     | -954       | -1,456       | -129            | -1,019       |
| 1          | -7,680     | -1,029     | -1,543       | -229            | -1,155       |
| 1          | -8,494     | -1,142     | -1,734       | -324            | -1,544       |
| 1          | -9,138     | -1,293     | -1,951       | -1,125          | -1,867       |
| 1          | -10,100    | -1,553     | -2,192       | -2,020          | -2,695       |
| 1          | -11,439    | -1,912     | -2,554       | -2,685          | -3,094       |
| 1          | -13,002    | -2,035     | -2,748       | -3,170          | -4,573       |
| 1          | -15,045    | -2,440     | -3,179       | -5,339          | -6,533       |
| 1          | -32,530    | -16,360    | -7,184       | -9,977          | -10,499      |

### MOS Period April 2017

Table 1 – Maximum MOS quantities (GJ)

|                     | Sydney MSP    | Sydney EGP   | Adelaide MAP  | Adelaide SEAGas | Brisbane RBP  |
|---------------------|---------------|--------------|---------------|-----------------|---------------|
| <b>MOS increase</b> | <b>20,462</b> | <b>3,794</b> | <b>10,439</b> | <b>178</b>      | <b>8,778</b>  |
| <b>MOS decrease</b> | <b>22,008</b> | <b>8,174</b> | <b>11,025</b> | <b>10,688</b>   | <b>10,683</b> |

Figure 1 – Curves of daily MOS quantities

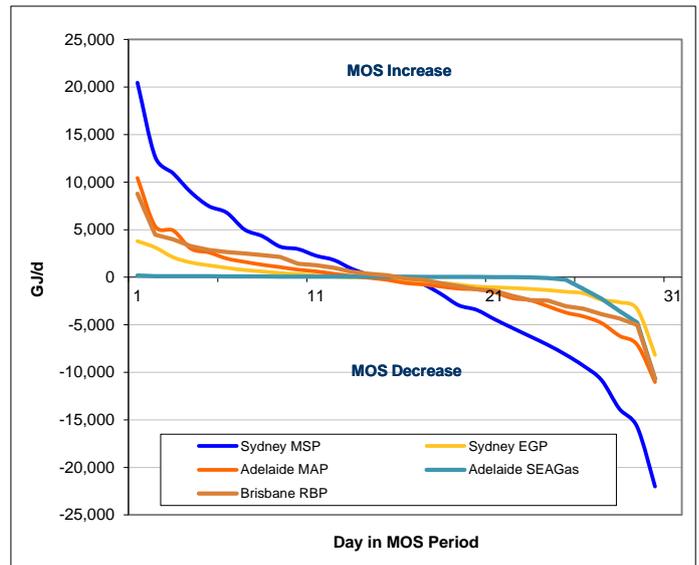


Table 2 – Summary statistics of daily MOS quantities

|                 | Summary statistics GJ/d |            |              |                 |              |
|-----------------|-------------------------|------------|--------------|-----------------|--------------|
|                 | Sydney MSP              | Sydney EGP | Adelaide MAP | Adelaide SEAGas | Brisbane RBP |
| Maximum         | 20,462                  | 3,794      | 10,439       | 178             | 8,778        |
| 95%             | 11,859                  | 2,661      | 5,148        | 112             | 4,248        |
| 75%             | 4,041                   | 563        | 1,247        | 77              | 2,281        |
| 50%             | -5                      | -217       | -444         | 51              | 33           |
| 25%             | -5,998                  | -1,211     | -2,365       | -8              | -2,288       |
| 5%              | -14,881                 | -3,027     | -6,674       | -4,218          | -4,718       |
| Minimum         | -22,008                 | -8,174     | -11,025      | -10,688         | -10,683      |
| Mean            | -796                    | -422       | -573         | -712            | -133         |
| Std deviation   | 8,882                   | 2,143      | 4,024        | 2,206           | 3,590        |
| % days positive | 50%                     | 43%        | 43%          | 73%             | 50%          |
| % days negative | 50%                     | 57%        | 57%          | 27%             | 50%          |

Figure 2 – Distribution of daily MOS quantities

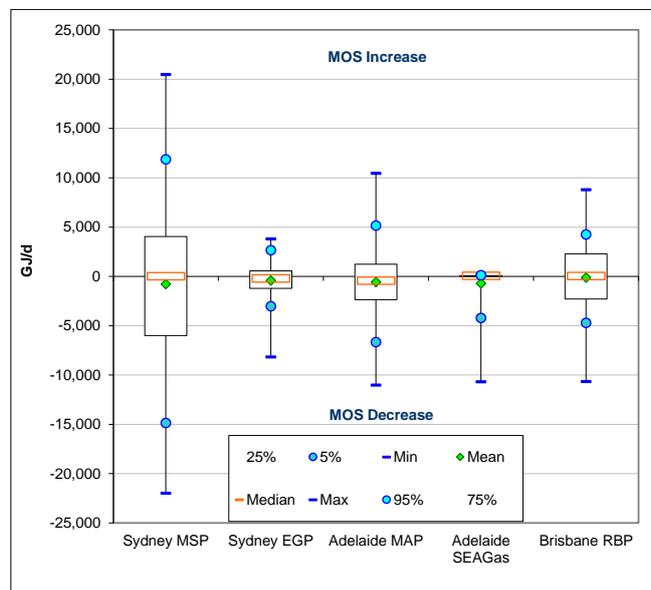


Table 3 – Daily MOS quantities (GJ/d) for April 2017

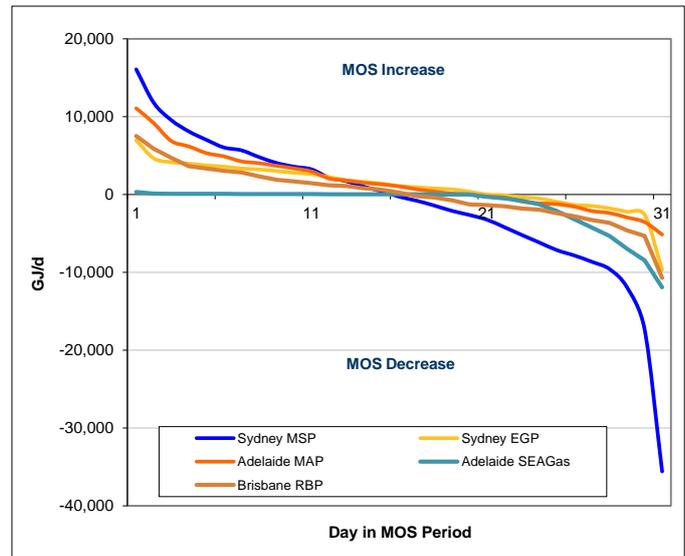
| No of days | Sydney MSP | Sydney EGP | Adelaide MAP | Adelaide SEAGas | Brisbane RBP |
|------------|------------|------------|--------------|-----------------|--------------|
| 1          | 20,462     | 3,794      | 10,439       | 178             | 8,778        |
| 1          | 12,623     | 3,125      | 5,334        | 118             | 4,476        |
| 1          | 10,925     | 2,094      | 4,920        | 104             | 3,970        |
| 1          | 8,929      | 1,545      | 2,999        | 102             | 3,274        |
| 1          | 7,480      | 1,251      | 2,609        | 96              | 2,881        |
| 1          | 6,791      | 987        | 1,967        | 90              | 2,646        |
| 1          | 5,015      | 754        | 1,615        | 86              | 2,502        |
| 1          | 4,317      | 606        | 1,310        | 79              | 2,333        |
| 1          | 3,213      | 434        | 1,059        | 70              | 2,126        |
| 1          | 2,961      | 310        | 793          | 62              | 1,415        |
| 1          | 2,265      | 185        | 615          | 60              | 1,263        |
| 1          | 1,813      | 74         | 366          | 58              | 993          |
| 1          | 899        | 1          | 132          | 56              | 579          |
| 1          | 262        | -19        | -66          | 53              | 353          |
| 1          | 86         | -115       | -277         | 52              | 207          |
| 1          | -96        | -320       | -611         | 49              | -142         |
| 1          | -726       | -479       | -757         | 46              | -269         |
| 1          | -1,754     | -595       | -982         | 43              | -634         |
| 1          | -2,950     | -782       | -1,197       | 33              | -945         |
| 1          | -3,432     | -987       | -1,279       | 26              | -1,274       |
| 1          | -4,411     | -1,057     | -1,578       | 20              | -1,426       |
| 1          | -5,329     | -1,138     | -2,198       | 11              | -1,953       |
| 1          | -6,221     | -1,235     | -2,420       | -14             | -2,399       |
| 1          | -7,126     | -1,356     | -3,052       | -84             | -2,452       |
| 1          | -8,152     | -1,527     | -3,716       | -257            | -3,042       |
| 1          | -9,331     | -1,691     | -4,131       | -1,254          | -3,313       |
| 1          | -10,815    | -2,374     | -4,817       | -2,249          | -3,877       |
| 1          | -13,833    | -2,639     | -6,154       | -3,549          | -4,337       |
| 1          | -15,739    | -3,345     | -7,099       | -4,765          | -5,029       |
| 1          | -22,008    | -8,174     | -11,025      | -10,688         | -10,683      |

### MOS Period May 2017

**Table 1 – Maximum MOS quantities (GJ)**

|                     | Sydney MSP | Sydney EGP | Adelaide MAP | Adelaide SEAGas | Brisbane RBP |
|---------------------|------------|------------|--------------|-----------------|--------------|
| <b>MOS increase</b> | 16,087     | 6,966      | 11,082       | 346             | 7,519        |
| <b>MOS decrease</b> | 35,576     | 9,676      | 5,140        | 11,922          | 10,703       |

**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         | 16,087                  | 6,966      | 11,082       | 346             | 7,519        |
| 95%             | 10,675                  | 4,405      | 8,027        | 111             | 5,304        |
| 75%             | 4,441                   | 3,127      | 3,865        | 65              | 2,117        |
| 50%             | -279                    | 1,088      | 1,047        | 33              | 249          |
| 25%             | -5,682                  | -438       | -1,009       | -1,019          | -1,864       |
| 5%              | -14,629                 | -2,399     | -3,240       | -7,724          | -4,962       |
| Minimum         | -35,576                 | -9,676     | -5,140       | -11,922         | -10,703      |
| Mean            | -1,248                  | 1,039      | 1,589        | -1,410          | 17           |
| Std deviation   | 9,645                   | 3,012      | 3,706        | 2,971           | 3,596        |
| % days positive | 48%                     | 68%        | 65%          | 61%             | 52%          |
| % days negative | 52%                     | 32%        | 35%          | 39%             | 48%          |

**Figure 2 – Distribution of daily MOS quantities**

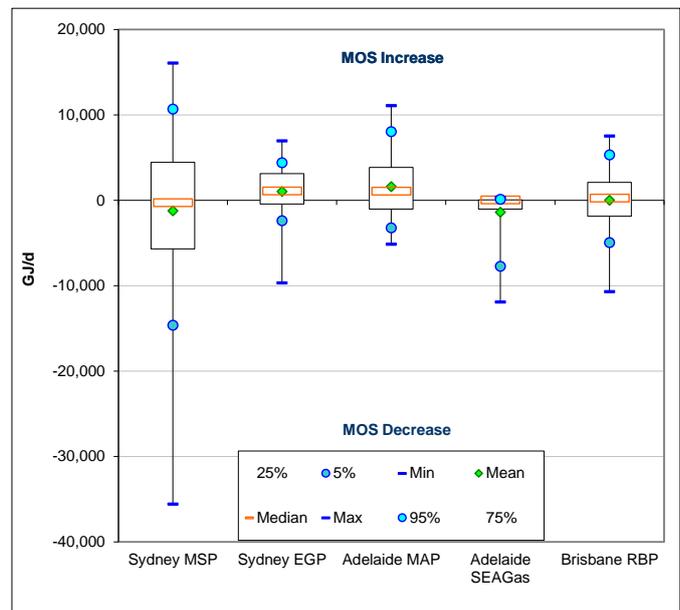


Table 3 – Daily MOS quantities (GJ/d) for May 2017

| No of days | Sydney MSP | Sydney EGP | Adelaide MAP | Adelaide SEAGas | Brisbane RBP |
|------------|------------|------------|--------------|-----------------|--------------|
| 1          | 16,087     | 6,966      | 11,082       | 346             | 7,519        |
| 1          | 11,788     | 4,659      | 9,176        | 118             | 5,908        |
| 1          | 9,562      | 4,152      | 6,877        | 103             | 4,699        |
| 1          | 8,110      | 3,984      | 6,184        | 88              | 3,645        |
| 1          | 7,031      | 3,742      | 5,330        | 83              | 3,350        |
| 1          | 6,050      | 3,591      | 4,904        | 81              | 3,047        |
| 1          | 5,686      | 3,351      | 4,263        | 72              | 2,844        |
| 1          | 4,820      | 3,232      | 4,030        | 67              | 2,342        |
| 1          | 4,062      | 3,022      | 3,700        | 62              | 1,891        |
| 1          | 3,582      | 2,794      | 3,356        | 57              | 1,683        |
| 1          | 3,240      | 2,640      | 2,967        | 52              | 1,456        |
| 1          | 2,169      | 2,251      | 2,066        | 50              | 1,203        |
| 1          | 1,710      | 1,846      | 1,798        | 46              | 1,109        |
| 1          | 1,000      | 1,624      | 1,505        | 40              | 798          |
| 1          | 422        | 1,406      | 1,310        | 38              | 625          |
| 1          | -279       | 1,088      | 1,047        | 33              | 249          |
| 1          | -794       | 948        | 675          | 29              | -200         |
| 1          | -1,412     | 784        | 386          | 19              | -372         |
| 1          | -2,087     | 675        | 132          | 3               | -722         |
| 1          | -2,620     | 369        | 26           | -8              | -1,251       |
| 1          | -3,226     | 16         | -258         | -297            | -1,340       |
| 1          | -4,191     | -81        | -382         | -507            | -1,501       |
| 1          | -5,196     | -361       | -892         | -780            | -1,795       |
| 1          | -6,167     | -514       | -1,125       | -1,258          | -1,933       |
| 1          | -7,145     | -927       | -1,234       | -2,133          | -2,393       |
| 1          | -7,836     | -1,324     | -1,563       | -3,175          | -2,813       |
| 1          | -8,646     | -1,466     | -2,114       | -4,247          | -3,272       |
| 1          | -9,581     | -1,771     | -2,374       | -5,330          | -3,620       |
| 1          | -11,936    | -2,208     | -2,944       | -6,979          | -4,595       |
| 1          | -17,322    | -2,590     | -3,535       | -8,469          | -5,329       |
| 1          | -35,576    | -9,676     | -5,140       | -11,922         | -10,703      |