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& CONSUMER COMMISSION

# Gas inquiry 2017-2020

**Interim report**

April 2019

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Australian Competition and Consumer Commission

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## Acronyms

ACT	Australian Capital Territory
ACQ	annual contract quantity
C&I	commercial and industrial
CPI	Consumer Price Index
DWGM	Declared Wholesale Gas Market
FOB	free on board
GJ	Gigajoule
GPG	gas powered generation/generator
GSA	gas supply agreement
GSH	Gas Supply Hub
GSOO	Gas Statement of Opportunities
JCC	Japanese Customs-Cleared Crude
JKM	Japanese Korea Marker
LNG	liquefied natural gas
MMBtu	Million British Thermal Units—see below, Units of Energy
NEM	National Electricity Market
NSW	New South Wales
NT	Northern Territory
PJ	Petajoule
QLD	Queensland
SA	South Australia
STTM	Short-term trading market
TJ	Terajoule
VIC	Victoria
WA	Western Australia
<b>Organisations</b>	
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission

AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
APLNG	Australia Pacific LNG Pty Ltd
Claypave	Claypave Pty Ltd
EPIK	Energy Projects and Infrastructure Korea
GLNG	Gladstone LNG
ICE	Intercontinental Exchange
QGC	QGC Pty Limited, previously Queensland Gas Company
RBA	Reserve Bank of Australia
RemaPak	RemaPak Pty Ltd
<b>Pipelines</b>	
NGP	Northern Gas Pipeline

## Glossary

**December 2018 report:** The ACCC's fifth interim report, published in December 2018, in the three year inquiry into the supply of and demand for wholesale gas in Australia that commenced in April 2017.

**East Coast Gas Market:** The interconnected gas market covering Queensland, South Australia, New South Wales, the Australian Capital Territory, Victoria and Tasmania.

**Heads of Agreement:** Agreement entered into between the LNG producers in Queensland and the Australian Government that LNG producers would offer uncontracted gas to the domestic market on competitive terms before exporting it.

**Free on-board price:** The price of gas loaded on a ship at a port connected to an LNG plant.

**Liquefaction:** The process of liquefying natural gas.

**Liquefied natural gas (LNG):** Natural gas that has been converted to liquid form for ease of storage or transport.

**LNG netback price:** A pricing concept based on an effective price to the producer or seller at a specific location or defined point, calculated by taking the delivered price paid for gas and subtracting or 'netting back' costs incurred between the specific location and the delivery point of the gas. For example, an LNG netback price at Wallumbilla is calculated by taking a delivered LNG price at a destination port and subtracting, as applicable, the cost of transporting gas from Wallumbilla to the liquefaction facility, the cost of liquefaction and the cost of shipping LNG from Gladstone to the destination port.

**LNG train:** A liquefied natural gas plant's liquefaction and purification facility.

**Load factor:** measures the extent to which a buyer can take more than the average daily contract quantity throughout the year, subject to the cap imposed by the annual contract quantity.

**Producer:** An entity that extracts natural gas for sale. This includes entities that are operators (i.e. responsible for carrying out the day-to-day management and operation of gas extraction) and entities that are part of a joint venture operated by another entity.

**Retailer:** For the purpose of this report, this term captures both entities that purchase natural gas in wholesale markets to sell to retail customers and entities that purchase natural gas in wholesale markets to resell to other buyers in those markets. This includes Origin Energy, AGL, Energy Australia, Alinta Energy and Shell Energy Australia.

### Reserves and resources

**Reserves:** Quantities of gas expected to be commercially recoverable from a given date under defined conditions.

**1P (proved) reserves:** Commercially recoverable reserves with at least a 90 per cent probability that the quantities recovered will equal or exceed the estimated quantity.

**2P (proved and probable) reserves:** Commercially recoverable reserves with at least a 50 per cent probability that the quantities recovered will equal or exceed the estimated quantity.

**Shipper:** A user of pipeline services.

**Southern States:** South Australia, New South Wales, the Australian Capital Territory, Victoria and Tasmania.

**Spot market/transaction:** One-off transactions, as distinct from transactions occurring under supply contracts.

**Swap arrangement:** An arrangement between two or more gas market participants to swap rights or obligations. For example, two gas producers in different locations may swap gas delivery obligations to minimise transportation.

**Take or pay:** A contract term specifying the minimum proportion of ACQ the buyer must pay for in each year.

**Unfulfilled offer:** A written offer for supply of gas that does not result in an agreement to supply gas.

Units of Energy

Joule—a unit of energy in the International System of Units

Gigajoule (GJ)—a billion ( $10^9$ ) joules

Terajoule (TJ)—a trillion ( $10^{12}$ ) joules

Petajoule (PJ)—a quadrillion ( $10^{15}$ ) joules

Million British Thermal Units (MMBtu)

## Overview

This is the sixth interim report in the Australian Competition and Consumer Commission's (ACCC) Inquiry ('the inquiry') into the demand for, and supply of, wholesale gas in Australia. As with previous reports, the ACCC has continued to focus on the East Coast Gas Market, where there are immediate and longer-term concerns.<sup>1</sup>

This report provides an update on matters related to the pricing of wholesale gas. The ACCC will report on other aspects of the gas market, including the demand and supply outlook, gas transport and retailer pricing in July 2019.

When the inquiry commenced in April 2017, the gas market was dysfunctional. Those domestic gas buyers in the east coast that could get offers for gas supply were receiving offers at prices that were well in excess of export parity prices. The highest priced offers made by retailers peaked as high as \$22/GJ.

Once the ACCC's September 2017 report highlighted this, the Australian Government reached a Heads of Agreement with the LNG producers. Under the terms of this agreement, the LNG producers committed to offer sufficient gas to the domestic market on reasonable terms.

As the LNG producers made more gas available into the domestic market, domestic price offers reduced substantially and by 2018 converged with LNG netback prices. However, domestic prices remain challenging for commercial and industrial (C&I) gas users.

The latest data shows that the bulk of C&I gas users will be paying at least \$9/GJ and some more than \$11/GJ for gas in 2019. Smaller C&I gas users who do not have the option of sourcing gas from producers, and instead rely on supply from retailers, face higher prices. Most have had to settle for prices above \$10 per gigajoule, and some above \$11 per gigajoule. As LNG prices rose over the course of 2018 due to an increase in global demand for gas, so did domestic prices. By August 2018, some offers to large C&I gas users exceeded \$12/GJ.

Many C&I gas users have informed the ACCC that at those gas prices, their operations are not sustainable in the medium to longer term. Several C&I gas users recently went into administration, citing rising gas costs as a contributing factor.

Expected LNG netback prices have fallen significantly over the past 6 months. The 2020 average of expected LNG netback prices at Wallumbilla fell from around \$11/GJ in October 2018 to around \$9/GJ as at the end of April 2019. The ACCC will be monitoring whether gas suppliers revise down prices in their offers to reflect these latest expectations as quickly as they increased the prices when expected LNG netback prices were rising in 2018.

The longer-term supply outlook in the east coast remains uncertain. In late March, AEMO published its 2019 Gas Statement of Opportunities (GSOO), forecasting that a supply gap will emerge in the Southern States from 2024. As the ACCC commented in the December 2018 report, further investment in gas exploration and development as well as key infrastructure is required to guarantee security of supply and sustainable prices for the domestic gas market in the east coast.

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<sup>1</sup> The East Coast Gas Market currently includes Queensland, South Australia, New South Wales, the Australian Capital Territory, Victoria and Tasmania. We also monitor the flow of gas from the Northern Territory into the east coast through the Northern Gas Pipeline. This report does not cover Western Australia for reasons set out in the September 2017 report.

## Most C&I gas users will pay at least \$9/GJ for gas in 2019

The bulk of C&I gas users in the East Coast Gas Market have now secured gas for supply in 2019.<sup>2</sup> Of those that entered into a contract in the past two years, most will pay at least \$9/GJ for gas,<sup>3</sup> with some paying more than \$11/GJ.<sup>4</sup>

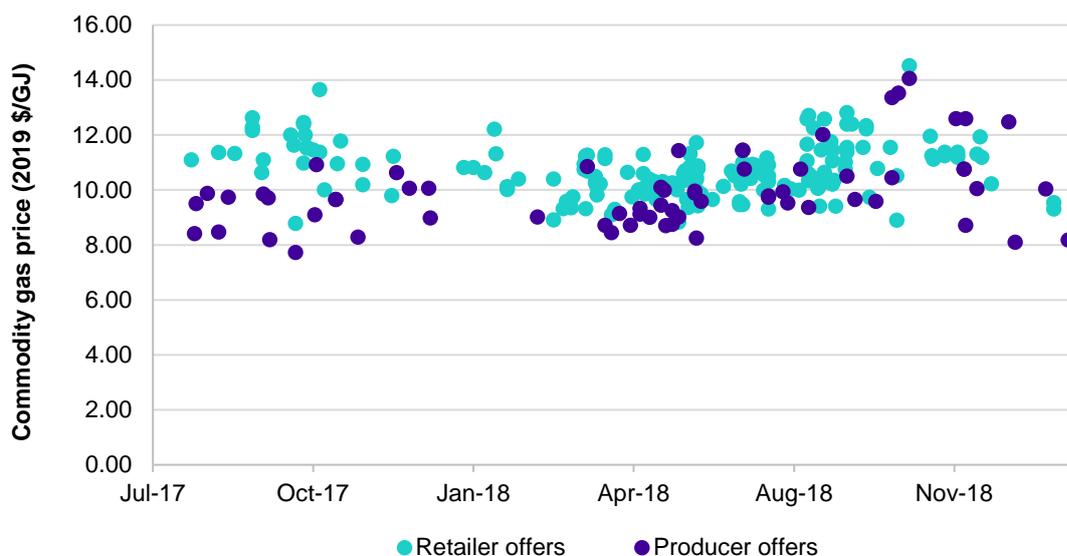
Over the past two years, many large C&I gas users were able to secure gas for supply in 2019 directly from producers at less than \$10/GJ, with some users entering into gas supply agreements (GSAs) below \$9/GJ. While some producers have continued to offer gas at less than \$10/GJ throughout 2018, some Victorian producers raised their prices above \$10/GJ.

There are many C&I gas users in the East Coast Gas Market who generally do not have the option of sourcing gas directly from producers and rely on supply from retailers. Prices charged by retailers for gas supply in 2019 have largely been much higher than prices charged by gas producers. Over the past two years, no C&I gas users were able to secure gas for 2019 supply from retailers under \$9/GJ. Most C&I gas users had to settle for prices above \$10/GJ, with some agreeing to pay over \$11/GJ.

## Most prices offered for gas supply in 2020 have been above \$10/GJ

Chart 1 shows prices offered by producers and retailers for gas supply in 2020.

**Chart 1: Gas commodity prices offered for 2020 supply in the East Coast Gas Market**



Source: ACCC analysis of offer information provided by suppliers.

Note: Prices are for gas commodity only. Actual prices paid by users may also include transport and retail cost components. All offers are for quantities of at least 0.5 PJ and have at least a 12 month supply period.

In the first half of 2018, prices offered by both producers and retailers for supply in 2020 were broadly similar to prices offered for 2019. However, over the course of 2018, offered

<sup>2</sup> Most C&I gas users purchase gas from retailers, while some are able to procure gas directly from producers.

<sup>3</sup> The prices reported in this report are wholesale gas commodity prices and do not include separate charges for transporting gas to the user's location or other ancillary charges.

<sup>4</sup> The prices presented in this report are for gas commodity only. Actual prices paid by C&I gas users may also include additional transportation and retailer charges.

prices trended upwards. In the period between June and November 2018, most offers were above \$10/GJ with a number of offers above \$12/GJ.<sup>5</sup>

The upward trend in prices coincided with rising expectations for Asian LNG spot prices. By October 2018, the expected LNG netback price at Wallumbilla for 2020 reached almost \$11/GJ.

After October 2018, there was a material shift in the expected supply-demand balance in the global LNG markets, which resulted in a reversal of expectations about LNG spot prices. By mid-April 2019, the expected LNG netback price at Wallumbilla for 2020 fell to \$8.91/GJ.

The ACCC will monitor whether lower expectations of LNG netback prices flow through to domestic price offers for 2020. In a well-functioning gas market, domestic users should not have to pay more for gas produced in Australia than overseas buyers.

## Energy affordability remains a critical issue for C&I gas users

Current gas prices, which are two to three times higher than historical prices, remain a critical issue for C&I gas users in the East Coast Gas Market. As we reported in our December 2018 report, a number of C&I gas users are facing very challenging long-term investment decisions and some C&I gas users have told us they are increasingly likely to relocate from the east coast or wind-up their operations.<sup>6</sup>

Several C&I gas users have already closed down in 2019. In January 2019, RemaPak, a producer of polystyrene coffee cups in Sydney, went into administration.<sup>7</sup> RemaPak's energy costs increased by 400 per cent in a space of just three years and it could no longer effectively compete against importers.<sup>8</sup>

In late March 2019, Claypave, a Queensland based bricks manufacturer, also announced that it had entered into voluntary administration, citing rising energy costs, including gas costs, as a factor.<sup>9</sup>

## Recent developments in the gas market

There have been several notable developments in the gas market since the ACCC's December 2018 report.

In December 2018, Energy Projects and Infrastructure Korea (EPIK) announced that it had signed a project development option agreement with the Port of Newcastle to develop an LNG import terminal to supply the East Coast Gas Market.<sup>10</sup> While this brings the total number of proposed LNG import terminals to five, none have yet been sanctioned.

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<sup>5</sup> Some of the prices above \$12/GJ offered to gas users contained pricing linked to future oil prices, which were very high when those offers were made.

<sup>6</sup> ACCC, *Gas Inquiry 2017–20 Interim Report*, December 2018, p.17.

<sup>7</sup> Worrells, *Remapak Pty Ltd enters Voluntary Administration*, press release, 21 January 2019. <https://worrells.net.au/press-release-remapak-pty-ltd-enters-voluntary-administration/>.

<sup>8</sup> Macdonald-Smith, *East coast gas crisis sends Remapak to the wall*, 20 January 2019. <https://www.afr.com/business/energy/gas/east-coast-gas-crisis-claims-victim-as-remapak-goes-under-20190119-h1a8s4>.

<sup>9</sup> Williams P. and Greenblat E., *Claypave fractures and gas price soars*, *The Australian*, 26 March 2019. <https://www.theaustralian.com.au/business/claypave-fractures-as-gas-price-soars/news-story/b326350cd641563d61c9c8b81596d34a?cspt=1554689495|5f0708059dbae8bcba7e092b9bb7f9b4>.

<sup>10</sup> Macdonald-Smith A., *Korea's EPIK unveils plans for Newcastle LNG import*, December 2018. <https://www.afr.com/business/energy/gas/koreas-epik-unveils-plans-for-newcastle-lng-import-project-20181205-h18ql0>.

On 3 January 2019, Jemena commenced commercial operations on the Northern Gas Pipeline, which connects the Northern Territory to the East Coast Gas Market.<sup>11</sup> At present, the stated capacity of the pipeline is 90 TJ per day, but Jemena had previously flagged that capacity could be expanded to 700 TJ per day if sufficient gas were produced in the Northern Territory.<sup>12</sup>

On 1 March 2019, AEMO launched a new capacity trading platform, which enables shippers to trade any unutilised transportation capacity they may have prior to nomination cut-off time. AEMO also launched a day-ahead auction, which provides for any contracted but un-nominated transportation capacity that shippers may have at nomination cut-off time to be sold through an auction at a zero reserve price.<sup>13</sup> While these two market mechanisms are in their infancy, early indications are that market participants are making use of the auction to transport material quantities of gas from Wallumbilla to New South Wales and Victoria via the South West Queensland Pipeline and the Moomba to Sydney Pipeline and towards Brisbane via the Roma to Brisbane Pipeline.<sup>14</sup>

On 28 March 2019, AEMO published its 2019 Gas Statement of Opportunities (GSOO).<sup>15</sup> While AEMO forecasts sufficient supply in 2020 to meet demand, AEMO noted that higher than expected demand, particularly from gas powered generators, could tighten the expected supply-demand balance. AEMO's finding is consistent with the ACCC's supply outlook for 2020 published in the December 2018 report and wholesale gas prices for 2020 observed to date. The ACCC will update its supply outlook for 2020 in the July 2019 report.

In the medium term, AEMO forecasts that a supply gap will emerge in the Southern States from 2024, due to continued decline in production from existing gas fields and lower than expected production from as yet undeveloped gas fields. AEMO considers that additional investment in infrastructure to transport gas from Queensland, or to import via LNG import terminals, will likely be needed to avoid shortfalls in the Southern States.

## Future work of the inquiry

The ACCC expects to provide the next interim report in July 2019 and two reports thereafter—in December 2019 and a final report in April 2020.

In each of these reports, the ACCC will further promote gas price transparency by providing updates on prices offered and agreed for gas supply across the domestic market.

In the July 2019 report, the ACCC will report on the gas supply and demand outlook for 2020 as part of the advice to the government under the Australian Domestic Gas Security Mechanism. The ACCC will also report on the experiences of C&I gas users in securing gas, transportation prices, effectiveness of the recent transportation reforms as well as retailer prices, costs and margins.

In the December 2019 report, the ACCC will provide updates on the gas supply and demand outlook, C&I gas user experiences and the pricing of transportation services.

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<sup>11</sup> Jemena, *Northern Gas Pipeline*. <https://jemena.com.au/pipelines/northern-gas-pipeline>.

<sup>12</sup> Jemena, *Jemena engages pipeline construction partner for the Northern Gas Pipeline Project*. <https://jemena.com.au/about/newsroom/media-release/2017/jemena-engages-pipeline-construction-partner-for-t>.

<sup>13</sup> AER, *Gas Market Report*, 24 February–2 March 2019. <https://www.aer.gov.au/system/files/AER%20gas%20weekly%20report%20-%2024%20February%20%E2%80%93%202%20March%202019.pdf>.

<sup>14</sup> AER, *Gas Market Report*, 17–23 March 2019. <https://www.aer.gov.au/system/files/AER%20gas%20weekly%20report%20-%2017%20%E2%80%93%2023%20March%202019.pdf>.

<sup>15</sup> AEMO, *Gas Statement of Opportunities*, 28 March 2019. <https://www.aemo.com.au/Gas/National-planning-and-forecasting/Gas-Statement-of-Opportunities>.

In the April 2020 report, the ACCC will finalise its recommendations to the Australian Government on further measures to improve transparency in, and operation of, the gas market in Australia.

The ACCC will also continue to publish the LNG netback price series on its website as one of the measures to improve transparency of gas prices in the East Coast Gas Market.

The ACCC will continue to make information available as appropriate.

# Wholesale gas prices in the East Coast Gas Market

## Key points

### Gas prices offered for 2019 and 2020

- Throughout 2018, prices offered by gas producers for supply in 2019 remained stable between \$8-10/GJ. However, prices offered by gas producers for supply in 2020 increased over the course of the year and were predominantly above \$10/GJ by the second half of 2018. Some producers made a number of oil-linked offers above \$12/GJ.
- Prices offered by retailers for supply in both 2019 and 2020 have largely been higher. Throughout 2018, most prices offered by retailers to C&I gas users were above \$10/GJ, with a number of offers above \$12/GJ.

### Comparison between prices offered for 2019 and LNG netback prices

- LNG spot prices were highly volatile throughout 2018. Expected LNG netback prices at Wallumbilla for 2019 increased from around \$7.60/GJ at the start of 2018 to over \$12.50/GJ in September 2018, and then fell back to just over \$9.50/GJ by mid-December 2018.
- At the end of 2018, prices offered by producers in Queensland for supply in 2019 were roughly in line with expected LNG netback prices at Wallumbilla for 2019, while prices offered by producers and retailers in the Southern States were within the range of the Victorian buyer and seller alternative prices.<sup>16</sup>

### Gas prices agreed under long-term GSAs for 2019 and 2020

- The bulk of C&I gas users in the East Coast Gas Market have now secured gas under long-term gas supply agreements (GSAs) for supply in 2019 and some have also contracted for 2020.<sup>17</sup>
- On average, C&I gas users will be paying around \$8.50-\$9.50/GJ in 2019 and around \$9-\$10/GJ in 2020. However, some will pay more than \$11/GJ.

### Gas prices paid under recent long-term GSAs in 2018

- Invoiced prices paid across the East Coast Gas Market in the second half of 2018 have continued to rise, as newer and higher-priced GSAs replace legacy GSAs.
- In the last quarter of 2018, gas producers in the East Coast Gas Market received, on average, \$8.70/GJ, while retailers received, on average, \$10.60/GJ under long-term GSAs executed since 1 January 2017.

### Short-term gas trades in Queensland in 2018

- The ACCC analysed short-term trades in Queensland in 2018 conducted bilaterally and at the Wallumbilla Gas Supply Hub (GSH). Prices agreed under short-term GSAs entered into bilaterally were similar to those agreed through the Wallumbilla GSH, with any differences likely due to the differences in the supply term and the flexibility provided in the bilateral GSAs.<sup>18</sup>

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<sup>16</sup> Victoria buyer alternative price = LNG netback price at Wallumbilla + transport from Queensland to Victoria, whereas the Victoria seller alternative price = LNG netback price at Wallumbilla – transport from Victoria to Queensland.

<sup>17</sup> In this report, long-term GSAs are those GSAs with a term of at least 12 months, involving physical delivery of gas.

<sup>18</sup> In this report, short-term GSAs are those GSAs with a term of less than 12 months, involving physical delivery of gas.

- However, there were significant differences in the number of short-term trades conducted and quantities traded. While 96 per cent of all the short-term trades conducted in Queensland took place through the Wallumbilla GSH, they were largely for very small quantities (on average, 3 TJ per trade). The bilateral trades, on the other hand, accounted for around 70 per cent (about 42 PJ) of the total quantity traded.
- While there are reasons why some market participants may prefer to sell gas on a short-term basis bilaterally, rather than via the Wallumbilla GSH, it may be possible to generate more liquidity at the Wallumbilla GSH. Consideration should be given to offering longer dated products and incorporating some degree of supply flexibility in the standardised Wallumbilla GSH products.<sup>19</sup>

### **LNG spot sales in 2017 and 2018**

- LNG exporters in Queensland sold 12 cargoes on LNG spot markets in 2018, down from 23 sold in 2017.<sup>20</sup>
- Prices received by Queensland LNG producers for LNG spot sales in 2017 and 2018 were broadly in line with the contemporaneous JKM price assessments.

### **Expected LNG netback prices for 2020**

- Expected LNG spot prices, based on JKM futures, have continued to fall due to changes in LNG supply-demand dynamics. By mid-April 2019, the expected LNG netback price at Wallumbilla for 2020 fell to \$8.91/GJ.
- The ACCC will monitor whether lower expectations of LNG netback prices flow through to domestic price offers for 2020.

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<sup>19</sup> For example, by adopting a take or pay percentage below 100 per cent and a load factor greater than 100 per cent.

<sup>20</sup> This includes LNG spot sales made by APLNG and GLNG only, as data from QGC is not available.

## 1. Introduction

This report presents information about wholesale gas prices in the East Coast Gas Market. Box 1.1 sets out the key parameters relevant to the analysis in this report.

### **Box 1.1: Parameters of reported prices**

Unless specified otherwise, the following applies to the analysis of invoices, gas supply agreements (GSAs), and offers and bids in this report:

- The prices reported are wholesale gas commodity prices and do not include separate charges for transporting gas to the user's location or other ancillary charges. The prices charged for transportation have been excluded from the analysis to enable a more direct comparison between the prices paid by buyers with differing transportation requirements.
- Only arm's length transactions are included. Related party transactions are excluded to ensure that the prices reported are reflective of market conditions.
- Only those transactions with a term of at least one year and an annual contract quantity of at least 0.5 PJ are included.
- Where average prices are reported, these are quantity-weighted average prices.
- The following entities were classified as 'retailers': Origin Energy, AGL, EnergyAustralia, Alinta Energy and Shell Energy Australia (refer to Glossary for further details).
- The prices of individual transactions are not all directly comparable due to differences in non-price aspects such as flexibility, quantity, contract term and delivery point. These non-price terms and the flexibility they can provide may be valued differently depending on the customer and may influence the gas prices that are ultimately agreed. The ACCC has not sought to adjust for these factors in the analysis presented in this report.

Gas suppliers in the Northern Territory have commenced supplying gas into the East Coast Gas Market via the Northern Gas Pipeline (NGP). However, we have excluded Northern Territory suppliers' prices from the analysis in this report and commented separately where relevant. Due to the relatively high transport cost component involved in delivering Northern Territory gas to East Coast Gas Market, it is less meaningful to compare only the gas commodity components of these prices with those in the east coast.

## 2. Prices offered and agreed for 2019 and 2020

### 2.1. Prices offered for gas supply in 2019

This report marks the fourth time we have reported on offers made and bids received by suppliers in the East Coast Gas Market for gas supply in 2019, and the first time we have reported on offers made and bids received for gas supply in 2020. We extend our previous coverage with the addition of information on offers made and bids received by gas suppliers between 31 August 2018 and 23 January 2019.

Box 2.1 sets out the ACCC's approach to reporting on offers and bids.

#### **Box 2.1: Approach to reporting on offers and bids**

The information in this box should be read in conjunction with information in box 1.1. The following also applies to the analysis of offers and bids in this section:

- The analysis only includes those offers and bids that are sufficiently developed to contain clear indications of price, quantity, supply start and end dates.
- The gas price for each offer and bid has been estimated using the pricing mechanisms specified in each offer or bid along with assumptions relating to key variables (for example, oil prices, foreign exchange rates and the consumer price index) based on the expectations for those variables at the time of the offer or bid.<sup>21</sup>
- Some producer and retailer offers specify a pricing mechanism linked to Brent crude oil prices. We calculated an indicative price in such offers using the following approach:
  - For each day in the month in which an offer was made, we calculated the expected price of Brent crude oil for the year of supply (for example, 2020) by taking a simple average of Brent crude oil prices expected in each month of that year.
  - We then averaged these daily estimates to derive a monthly estimate for the year of supply.
  - We then applied this monthly estimate to the pricing mechanism specified in the offer to arrive at an indicative price.

Analysis of offer and bid pricing throughout this report is intended to provide an indication of price trends over time. As explained in box 2.1, the prices of individual offers and bids are not all directly comparable, as they can differ in non-price terms and conditions. Offer and bid pricing in some instances may also reflect seasonal price fluctuations, linkages to prices

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<sup>21</sup> In all estimates of offer and bid prices in this report, the following assumptions were made, where relevant:

- The expected AUD/USD exchange rate is equal to the average rate prevailing during the month in which the offer or bid occurred (source: RBA).
- The expected Brent crude oil price is equal to the average price of futures contracts traded during the month in which the offer or bid occurred (source: Bloomberg).
- The expected Japanese Customs Cleared (JCC) crude oil price is derived using the expected Brent crude oil price as a proxy.
- The expected Japan Korea Marker (JKM) LNG price is equal to the average price of futures contracts traded during the month in which the offer or bid occurred (source: ICE).
- The applicable CPI is based on actual CPI where available at the time the bid or offer occurred (up to the most recent available quarter, source: ABS), and 2.5 per cent thereafter.

of other commodities (such as oil) or, in the case of GPGs, conditions in the electricity market.

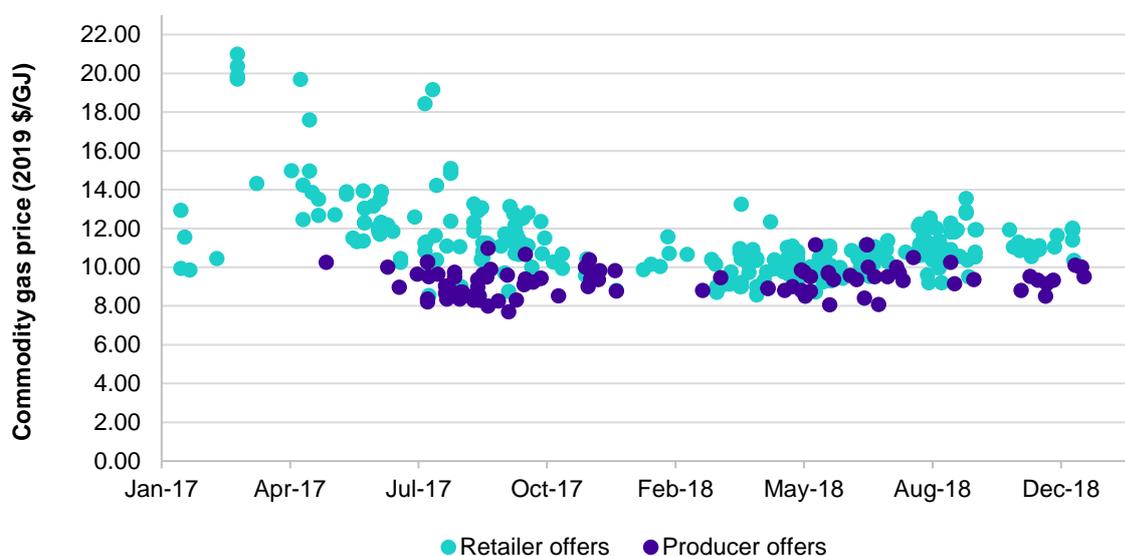
As discussed in box 1.1, we have excluded offers to, and bids from, suppliers in the Northern Territory from the analysis in this section. In the period between 24 April 2018 and 23 January 2019, Northern Territory producers made a small number of offers and received a small number of bids at lower prices compared to those reported in tables 2.1 and 2.3. However, once the cost of transportation from the Northern Territory is included, the offers from and bids to the Northern Territory producers are broadly consistent with the prices of offers made and bids received by east coast suppliers.

### 2.1.1. Offers and bids for gas supply in 2019

Chart 2.1 below shows the gas commodity prices offered by retailers to C&I gas users and by producers to all buyers over the period 1 January 2017 to 23 January 2019 for supply in 2019. The chart is intended to give an indication of how the level of price offers in the East Coast Gas Market has evolved since the start of 2017.

It should be noted that not all price offers in the chart (and those discussed in this section) are for unique combinations of seller and buyer. That is, some offers may reflect follow up offers that were made by the same supplier to the same buyer after a previous offer did not result in a GSA.

**Chart 2.1: Gas commodity prices offered for 2019 supply in the East Coast Gas Market**



Source: ACCC analysis of offer information provided by suppliers.

Notes: Prices are for gas commodity only. Actual prices paid by users may also include transport and retail cost components. The chart includes offers for gas supply of at least 12 months duration. Offers before 14 July 2017 are part of multi-year unfulfilled offers for annual quantities of at least 1 PJ. After 14 July 2017, all offers for quantities of at least 0.5 PJ and 12 months duration are included. Any offers made prior to 14 July 2017 solely for gas supply in 2019 are not included because the ACCC does not have this data.

Our previous reports have highlighted the downward trend in prices offered across the east coast through the middle of 2017, as they came down from an early-2017 peak of around \$21/GJ. From January to August 2018, offer prices followed a flat trend, with most offers priced in the \$9 to \$12/GJ range.

Chart 2.1 shows that between August 2018 and January 2019, most offers for supply in 2019 were priced between \$8 and \$12/GJ, with some retailer offers in August and September 2018 between \$12 and \$14/GJ.

Between January 2017 and January 2019, prices offered by producers for supply in 2019 followed a noticeably different pattern to prices offered by retailers. In that period, the prices offered by producers remained relatively consistent, following a flat trend mostly between \$8/GJ and \$10/GJ. A small number of producer offers had higher prices, between \$10/GJ and \$12/GJ.

In contrast, the price range of retailer offers fluctuated significantly between January 2017 and January 2019. During early 2017, prices offered by retailers ranged between \$10/GJ and \$21/GJ. As more gas was made available to the domestic market following the signing of the Heads of Agreement between the Australian Government and the LNG producers in October 2017, this spread narrowed. From October 2017 to July 2018, the prices offered largely ranged between \$8/GJ and \$12/GJ. From August 2018, this changed. In August and September 2018, offered prices ranged between \$9/GJ and \$14/GJ, while from October 2018 they were largely between \$10/GJ and \$12/GJ.

Generally, prices in retailer offers for supply in 2019 were above \$10/GJ, whereas prices in producer offers were below \$10/GJ. This is consistent with previous reporting by the ACCC that prices offered by retailers have generally been higher than prices offered by producers.<sup>22</sup>

As evident in the chart, the number of offers made by retailers is larger than the number of offers made by producers. This is largely because producers prefer to sell gas to very large gas buyers and often do not have pipeline capacity to deliver gas to the gas user's location. In contrast, retailers build their business on purchasing large quantities of gas, acquiring transport capacity on key pipelines and then supplying both large and small users. Many C&I gas users, particularly those that are too small to engage directly with producers, rely on effective competition between retailers to keep their prices down.<sup>23</sup>

### ***Recent offers and bids for gas supply in 2019***

This section discusses recent offers made and bids received by producers and retailers for gas supply in 2019.

Table 2.1 presents analysis of recent offers made and bids received by gas producers for gas supply to all buyers in 2019. The table compares the offers made and bids received in the periods from 25 April 2018 to 30 August 2018 (period 1) and from 31 August 2018 to 23 January 2019 (period 2).<sup>24</sup>

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<sup>22</sup> ACCC, *Gas Inquiry 2017–2020 Interim Report*, December 2018, p. 76.

<sup>23</sup> ACCC, *Gas Inquiry 2017–2020 Interim Report*, June 2018, p. 61.

<sup>24</sup> Period 1 covers 'recent offers and bids' we reported in the December 2018 report, while period 2 covers offers and bids we have received since.

**Table 2.1: Recent offers made and bids received by producers for gas supply in 2019 (all buyers)<sup>25</sup>**

<b>Period 1: 25 April 2018–30 August 2018</b>	<b>Offers</b>	<b>Bids</b>
Number of offers or bids	26	44
Gas commodity price range (\$/GJ)	8.05–11.16	6.41–10.50
Average gas commodity price (\$/GJ)	9.78	8.98
<b>Period 2: 31 August 2018 – 23 January 2019</b>	<b>Offers</b>	<b>Bids</b>
Number of offers or bids	13	15
Gas commodity price range (\$/GJ)	8.50–10.25	8.50–10.63
Average gas commodity price (\$/GJ)	9.36	9.48

Source (period 1): ACCC, Gas Inquiry 2017-2020 Interim Report, December 2018, table 3.1.

Source (period 2): ACCC analysis of offer and bid information provided by suppliers.

Table 2.1 shows that the average of prices offered by producers in period 2 (146 days) was \$0.42/GJ lower than in period 1 (128 days), while the average bid price in period 2 was \$0.50/GJ higher than in period 1. Notably, the spreads of both offer and bid prices were narrower in period 2 than they were in period 1. The spread of offered prices was \$3.11/GJ in period 1 compared to \$1.75/GJ in period 2, and the spread of bid prices was \$4.09/GJ in period 1 compared to \$2.13/GJ in period 2.

Offers made by producers in period 2 for gas supply in 2019 were on average \$0.12/GJ cheaper than the bids received by producers. Despite the fact the difference between the average of offered prices and the average of bid prices is relatively small, this is unusual given that offers (made by suppliers) are typically priced higher than bids (made by buyers).

Table 2.1 shows that the number of producer offers made for gas supply in 2019 decreased towards the end of 2018—from 26 in period 1 to 13 in period 2. This could be due to a range of reasons, for example:

- Rather than making offers to multiple gas buyers in response to their tenders, some suppliers ran their own expression of interest processes.<sup>26</sup> As a result, suppliers may have issued a single counter offer during period 2 in response to multiple bids they received during period 1. This is supported by the fact that, in period 2, seven out of the 13 (54 per cent) offers made by producers were accepted, a relatively high proportion compared to seven accepted out of 26 (27 per cent) in period 1.
- As the supply period approaches and an increasing number of GSAs are executed, the amount of uncontracted gas available decreases, as does the demand for gas. Given

<sup>25</sup> Prices are for gas commodity charges only; actual prices paid by users may also include transport and retail charges. Includes offers and bids for gas supply of at least 12 months duration and annual quantities of at least 0.5 PJ.

<sup>26</sup> ACCC, *Gas Inquiry 2017–2020 Interim Report*, December 2018, pp. 77–78.

that seven offers were accepted in period 1, it is likely that there were less buyers looking to source gas in period 2.

Table 2.2 presents analysis of offers made and bids received by gas retailers for gas supply in 2019. The data in this table is limited to offers made to, and bids received from, C&I gas users in the same period as table 2.1.

**Table 2.2: Recent offers made and bids received by retailers for gas supply in 2019 (C&I gas users)<sup>27</sup>**

<b>Period 1: 25 April 2018 – 30 August 2018</b>	<b>Offers</b>	<b>Bids</b>
Number of offers or bids	84	<5
Gas commodity price range (\$/GJ)	8.72–12.53	8.70–9.72
Average gas commodity price (\$/GJ)	10.31	9.15
<hr/>		
<b>Period 2: 31 August 2018 – 23 January 2019</b>	<b>Offers</b>	<b>Bids</b>
Number of offers or bids	62	9
Gas commodity price range (\$/GJ)	9.19–13.54	6.63–12.20
Average gas commodity price (\$/GJ)	11.09	10.47

Source (period 1): ACCC, *Gas Inquiry 2017–2020 Interim Report*, December 2018, table 3.2, and additional information received after the publication of that report.

Source (period 2): ACCC analysis of offer and bid information provided by suppliers.

Table 2.2 shows that 22 less offers were made by retailers to C&I gas users for supply in 2019 in period 2 (146 days) compared to period 1 (128 days). As is the case with producer offers, the number of retailer offers made to C&I gas users decreased towards the end of 2018. The number of bids received by retailers from C&I gas users was low in both periods.

In period 2, only four out of the 62 offers made by retailers to C&I gas users (six per cent) were accepted, compared to 11 offers accepted out of 84 (13 per cent) in period 1. At least in part, this is likely to be due to offered prices by retailers to C&I gas users being higher, on average, in period 2 than in period 1.

The range of both offer and bid prices was also wider in period 2 than in period 1. The range of offer prices was \$4.35/GJ in period 2 compared to \$3.81/GJ in period 1, and the range of bid prices was \$5.57/GJ in period 2 compared to \$1.02/GJ in period 1.

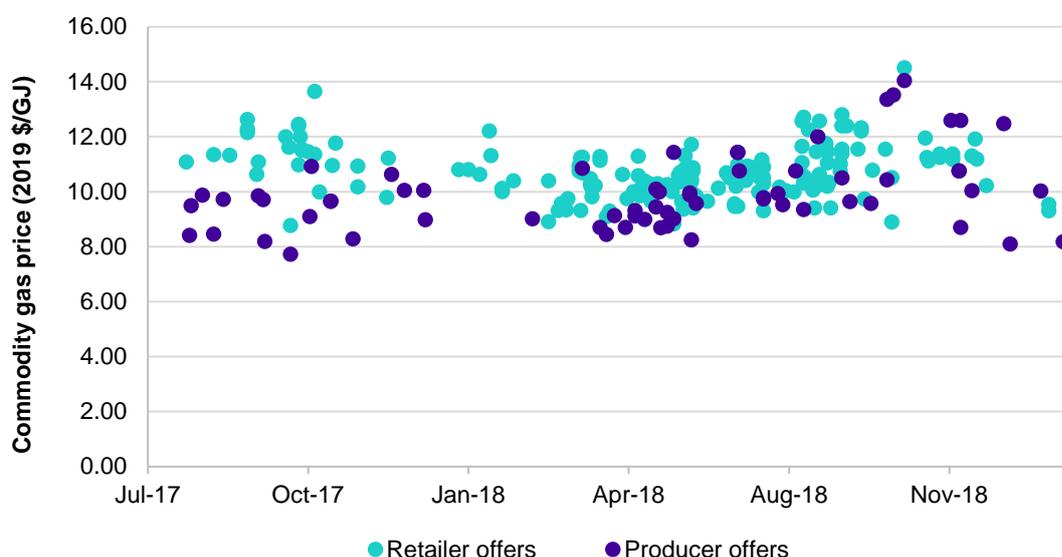
<sup>27</sup> The number of offers and average gas commodity price of offers made by retailers in the period between 25 April 2018 and 30 August 2018, shown in table 2.2, differs from that shown in table 3.2 of the ACCC December 2018 report due to the inclusion of four additional offers made in that period that were received by the ACCC following the publication of the December 2018 report.

Of the nine bids received by retailers from C&I gas users, two were accepted (22 per cent). The remaining offers and bids which had not been accepted were either still being negotiated at the time the ACCC acquired information, or had been rejected, superseded or withdrawn.

### 2.1.2. Offers and bids for gas supply in 2020

Chart 2.2 shows the gas commodity prices offered by producers and retailers over the period from 1 July 2017 to 23 January 2019 for gas supply in 2020. The chart is intended to give an indication of how the level of price offers for gas supply in 2020 has evolved since July 2017. Similar to chart 2.1, some offers may reflect follow up offers that were made from the same supplier to the same buyer after a previous offer did not result in a GSA.

**Chart 2.2: Gas commodity prices offered for 2020 supply in the East Coast Gas Market**



Source: ACCC analysis of offer information provided by suppliers.

Note: Prices are for gas commodity only. Actual prices paid by users may also include transport and retail cost components. All offers are for quantities of at least 0.5 PJ and have at least a 12 month supply period.

Chart 2.2 shows that between July 2017 and January 2019, most offers for gas supply in 2020 were priced between \$8/GJ and \$12/GJ. Higher prices, between \$12/GJ and \$14/GJ, were offered in August and September 2017 and between August and December 2018. The period in which the greatest number of offers for supply in 2020 were made was between March and September 2018, during which time there was a slight upward trend in prices.

Producers made more offers at prices above \$10/GJ for supply in 2020 than they did for supply in 2019 (as observed in chart 2.1). In fact, the majority of offers made by producers since July 2018 were above \$10/GJ, with several offers above \$12/GJ. In part, this is because a number of these offers are oil-linked and producers made these offers when oil prices were relatively high (refer to box 2.1 for explanation of how we calculated indicative gas prices for oil-linked offers). The prices that will actually be paid by gas buyers for accepted oil-linked offers will depend on the oil prices and exchange rates that prevail during the supply period.

The shape of the retailer offers scatter plot for supply in 2020 is similar to the retailer offers scatter plot for supply in 2019. In the first half of 2018, offered prices by retailers sat mostly

between \$9.00/GJ and \$12/GJ. In the second half of 2018, there was a slight upward trend in prices, with several offers made above \$12/GJ in August and September.

### **Recent offers and bids for gas supply in 2020**

This section discusses recent offers made and bids received by producers and retailers for supply in 2020. As this is the first time we are reporting on 2020, we'll cover the last 12 months for which we have data—between 1 January 2018 and 23 January 2019.

Table 2.3 presents analysis of offers made and bids received by gas producers for supply to all buyers in 2020.

**Table 2.3: Recent offers made and bids received by producers for gas supply in 2020 (all buyers)<sup>28</sup>**

<b>1 January 2018–23 January 2019</b>	<b>Offers</b>	<b>Bids</b>
Number of offers or bids	48	76
Gas commodity price range (\$/GJ)	8.10–14.05	6.29–11.30
Average gas commodity price (\$/GJ)	10.30	9.06

Source: ACCC analysis of offer and bid information provided by suppliers.

Table 2.3 shows that there were 28 more bids received by producers than offers made by producers. This is due to some gas producers using expression of interest processes to sell gas, and receiving a large number of bids in response. Of the 48 offers made between 1 January 2018 and 23 January 2019, ten were accepted (21 per cent). The remaining offers were either still being negotiated at the time the ACCC acquired information, or had been rejected, superseded or withdrawn.

As noted under chart 2.2, the range of offered prices is relatively large, at \$5.59/GJ, and the range of bids is similar at \$5.01/GJ. The average of prices offered by producers was \$1.24 higher than the average price of bids received by producers.

Table 2.4 shows offers made by retailers to C&I gas users and bids received by retailers from C&I gas users for supply in 2020.

<sup>28</sup> Prices are for gas commodity charges only; actual prices paid by users may also include transport and retail cost components. Includes offers and bids for gas supply of at least 12 months duration and annual quantities of at least 0.5 PJ.

**Table 2.4: Recent offers made and bids received by retailers for gas supply in 2020 (C&I gas users)**

1 January 2018–23 January 2019	Offers	Bids
Number of offers or bids	159	11
Gas commodity price range (\$/GJ)	8.83–14.52	6.80–12.40
Average gas commodity price (\$/GJ)	10.64	8.87

Source: ACCC analysis of offer and bid information provided by suppliers.

Table 2.4 shows that there was also a large range of offered prices by retailers to C&I gas users for supply in 2020, with a spread of \$5.69/GJ. There was a similar spread in prices of bids (\$5.60/GJ), however bid prices were on average \$1.78/GJ lower. The spread between prices in offers made and bids received by retailers for gas supply in 2020 is much greater than the gap in prices observed for gas supply in 2019 (see table 2.2). This may explain, in part, why only 9 of the 159 offers (6 per cent) made by retailers for 2020 since 1 January 2018 were accepted.

## 2.2. Prices offered for gas supply in 2019 compared to contemporaneous LNG netback price expectations and production cost

This section compares prices offered for 2019 supply in the East Coast Gas Market in each month between January 2017 and January 2019 with:

- expectations of 2019 LNG netback prices at the time the offer was made, based on market expectations (at the time the offer was made) of Asian LNG spot prices over the course of 2019 (box 2.2)<sup>29</sup>
- the estimated cost of gas production, which is based on the estimated breakeven gas price of the marginal supplier of gas in the East Coast Gas Market for 2019 (box 2.3).

### Box 2.2: LNG netback prices used for comparison

The ACCC has used LNG netback prices based on Asian LNG spot prices to compare against prices offered in the East Coast Gas Market, as Asian LNG spot prices are a key factor influencing domestic gas prices under current market conditions (given LNG markets offer an alternative to selling gas in the domestic market). To calculate an LNG netback price to compare against offers for future supply, we have:

- calculated a forward-looking LNG netback price as at the date of the offer—based on market expectations of future LNG spot prices during the period of supply—as this gives the best indication of the likely opportunity cost of supplying gas to the domestic market<sup>30</sup>
- used short-run marginal costs of LNG production and transport, since LNG producers are making decisions about the sale of excess gas over the short-run.

We have calculated LNG netback prices using the method and assumptions used for the LNG netback price series, which is regularly published on the ACCC's website, and which are outlined in the ACCC's Guide to the LNG netback price series.<sup>31</sup>

The domestic offers analysed in this section are all for gas supply over the entire calendar year. Therefore, for the purpose of comparison, we calculated an average LNG netback price that an LNG exporter would expect to receive to be indifferent between selling the gas to the domestic buyer over the entirety of 2019, and selling cargoes on the Asian LNG spot market in 2019.

For example, the ACCC calculated the average of LNG netback prices for 2019 that an LNG producer would have expected in July 2017 as follows:

- The ACCC obtained JKM futures prices for each month of 2019 that were quoted by ICE on each day during July 2017.

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<sup>29</sup> Where the phrase 'expected LNG netback prices' or similar phrases are used in this report, we refer to LNG netback prices calculated on the basis of Asian spot LNG futures prices, which represent LNG futures market participants' collective expectations of Asian spot LNG prices for given futures contract months. The 'expected LNG netback prices' shown in this report do not represent an ACCC forecast of international or domestic gas prices.

<sup>30</sup> For this, the ACCC has used futures prices of the Japan Korea Marker (JKM) quoted by the Intercontinental Exchange (ICE).

<sup>31</sup> ACCC, Guide to the LNG netback prices series, <https://www.accc.gov.au/system/files/Guide%20to%20the%20LNG%20netback%20price%20series%20-%20October%202018.pdf>.

- The ACCC converted the monthly 2019 JKM futures prices into LNG netback prices at Wallumbilla by:
  - converting the prices from US\$/MMBtu into A\$/GJ using contemporaneous exchange rates and a conversion factor between MMBtu and GJ, and
  - subtracting the short-run marginal costs of shipping, liquefaction<sup>32</sup> and transportation.<sup>33</sup>
- The ACCC averaged these monthly LNG netback prices to arrive at an average of LNG netback prices for 2019 expected on each day during July 2017.
- The ACCC then averaged these 2019 expectations for each day of July 2017 to arrive at an average of LNG netback prices for 2019 expected during the month of July 2017.

For the analysis of 2019 prices below, the ACCC calculated the expected LNG netback prices at Wallumbilla in this way for each month between January 2017 and December 2018. For January 2019, however, the ACCC calculated the expected LNG netback prices for 2019 based on the settled JKM price in January and forward prices for the remainder of 2019 (as JKM futures quoted in January 2019 did not include a futures price for January 2019).

### Box 2.3 Cost of production used in this section

In 2018, the ACCC engaged Core Energy (Core) to develop detailed and up-to-date estimates of the gas production costs currently facing producers in the East Coast Gas Market.<sup>34</sup> For individual supply regions across the east coast, Core estimated both full lifecycle costs of production and forward costs of production for 2P reserves as at 31 December 2017.

The analysis in this section compares price offers for 2019 supply with estimates of forward production costs, since over the short-term producers are likely to continue producing gas as long as they expect to recover their operating costs and achieve a sufficient rate of return on future investment.

Core Energy's report on gas production costs estimated the costs of production in 2019 for a range of areas. The ACCC has chosen to use the estimated forward costs for the marginal source of supply on the east coast, as this would likely set the price floor in negotiations between gas suppliers and buyers. The ACCC chose the region connected to the East Coast Gas Market, which has material uncontracted reserves that Core expects to be in production in 2019 and 2020, and which Core estimated to have the highest forward cost.

Based on Core's forward cost estimates, the highest cost supply region that meets these criteria is the Middle Surat and Roma Shelf supply region, which Core estimates to include 9,260 PJ of 2P reserves with an estimated forward production cost of \$5.55/GJ.

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<sup>32</sup> We estimated the incremental costs of liquefaction and fuel used in the operation of the LNG trains based on data obtained from the LNG producers in Queensland.

<sup>33</sup> We estimated incremental costs of transporting gas from Wallumbilla to the LNG trains based on the data from the LNG producers.

<sup>34</sup> Core Energy, Gas Production Cost Estimates: Eastern Australia, 2018  
<https://www.accc.gov.au/system/files/Core%20Energy%20report%20for%20ACCC%20-%20November%202018.pdf>.

Sections 2.2.1 and 2.2.2 present the findings of our comparison for prices offered in Queensland and the Southern States for supply in 2019.

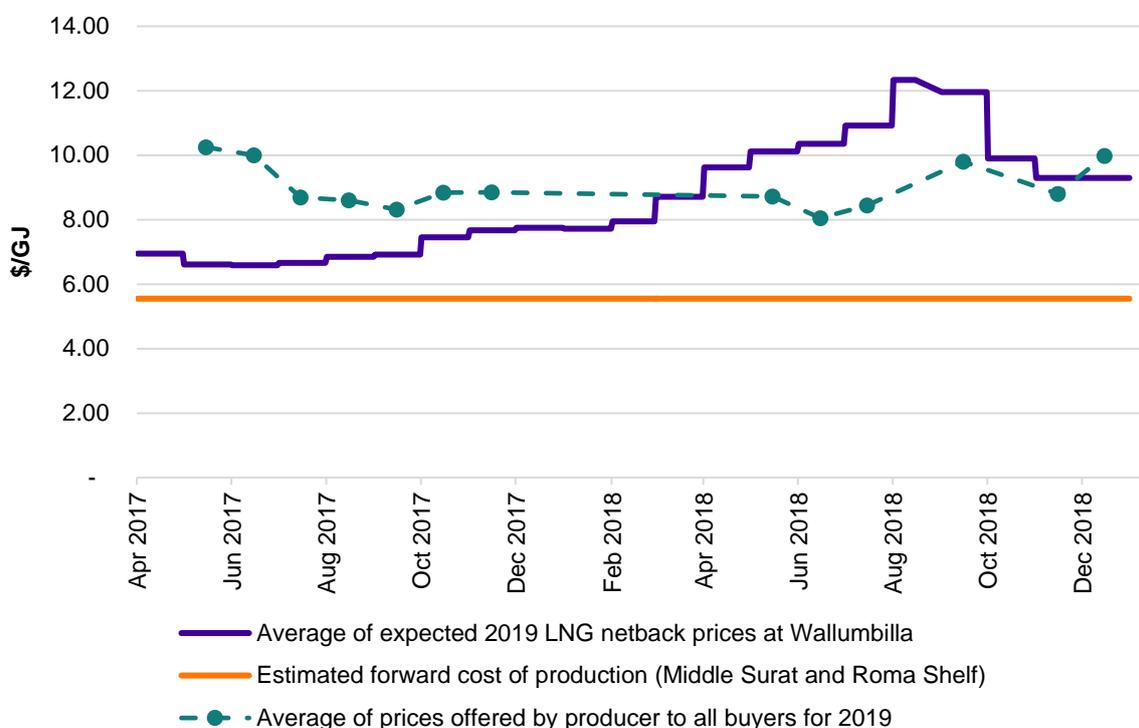
### 2.2.1. Domestic price offers for 2019 supply in Queensland

This section compares prices offered for 2019 supply in Queensland to contemporaneous expectations of 2019 LNG netback prices and estimated forward cost of production.

Chart 2.3 below compares the quantity-weighted averages of prices offered by Queensland producers with:<sup>35</sup>

- the averages of expected LNG netback prices at Wallumbilla for 2019 in each month between January 2017 and January 2019<sup>36,37</sup>
- the estimated forward cost of production for the marginal supplier.

**Chart 2.3: Averages of monthly gas commodity prices offered by Queensland producers for 2019 supply against contemporaneous expectations of LNG netback prices**



Source: ICE, Argus, Core Energy, ACCC analysis of information provided by suppliers.

Note: JKM futures prices quoted by ICE before June 2017 related to futures contracts for the first half of 2019 only.

<sup>35</sup> Prices reflected in the charts do not include offers for supply of gas produced in NT. Absence of data points for particular months for each series of offers indicates months in which no offers were made, or there were insufficient offers made for data to be published given confidentiality considerations.

<sup>36</sup> The chart does not include offers from retailers in Queensland due to the small number of offers made over the relevant period.

<sup>37</sup> The price averages shown in this chart are derived using the same information used in our analysis of 2019 prices in section 2.1, but for the purpose of this chart the prices offered in each month are averaged.

Note: Prices are for gas commodity only. Actual prices paid by users may also include transport and retail cost components. Includes offers for gas supply of at least 12 months duration. Offers before 14 July 2017 are part of multi-year unfulfilled offers for annual quantities of at least 1 PJ. Any offers made prior to 14 July 2017 solely for gas supply in 2019 are not included (ACCC does not have this data). After 14 July 2017, all offers for quantities of at least 0.5 PJ are included.

Chart 2.3 shows that the average of prices offered by producers in Queensland over the period May 2017 to December 2018 has been relatively steady, ranging between about \$8-10/GJ. In contrast, contemporaneous averages of expected 2019 LNG netback prices have fluctuated significantly over this period, ranging between about \$6.60–12.30/GJ. By December 2018 (the final month in which offers were made by Queensland producers for 2019 supply), the average of prices offered by producers was broadly in line with the average of expected 2019 LNG netback prices.

The chart shows that at various points in 2018, the averages of domestic prices offered by producers were quite different from the measures of the LNG netback prices calculated by the ACCC. For example, the average of prices offered in July 2018 was about \$2/GJ lower than the LNG netback prices expected at the time.

There could be a number of reasons for this. First, the price averages in the chart are based on a relatively small number of offers and would therefore be disproportionately influenced by outliers. In addition, producers often make offers in the course of negotiations that take place over a period of up to several months. Given LNG netback prices were rapidly changing in 2018, it is not surprising that the prices offered by suppliers did not equate to the LNG netback price expectations on the day the offers were made. Producers may have also formed a view that rapid fluctuations in LNG netback prices in 2018 were only temporary and may have made offers based on their own estimates of expected LNG netback prices.

Notwithstanding this, LNG netback prices are a key factor influencing domestic prices and provide an important reference price to assist gas users in negotiations with gas suppliers.

Chart 2.3 shows that while for most of the second half of 2018 prices offered for 2019 supply were, on average, below expected LNG netback prices, these offered prices were still materially above the estimated marginal forward cost of production (by between about \$2.50-5/GJ).

## 2.2.2. Domestic price offers for 2019 supply in the Southern States

As explained in our previous reports, the ACCC has adopted a bargaining framework to analyse pricing outcomes in the Southern States.<sup>38</sup> Under this framework, the pricing dynamics in the Southern States are different from those in Queensland. Box 2.4 explains the ACCC's bargaining framework and how it is used to assess prices offered in the East Coast Gas Market.

### Box 2.4: ACCC bargaining framework

Due to the cost of transportation between the Southern States and Queensland, there is a range of possible pricing outcomes in gas supply negotiations in the Southern States, which would usually be expected to fall between:

- the buyer alternative (representing a ceiling in negotiations)—the LNG netback price at

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<sup>38</sup> ACCC, *Gas Inquiry 2017–20 – Interim Report*, September 2017, p. 69.

Wallumbilla plus the cost of transporting gas from Wallumbilla to the user's location, and

- the seller alternative (representing a floor in negotiations)—the LNG netback price at Wallumbilla less the cost of transporting gas to Wallumbilla or the cost of production (whichever is higher).

Where a price actually achieved in a negotiation will fall within this range is likely to depend on a number of factors, including the location of the buyer, the expectations of the parties about supply and demand dynamics in the Southern States, the relative bargaining strength of the parties and the non-price terms and conditions agreed by the parties.

The supply-demand balance in the Southern States is particularly important to the outcome. If there are limited supply options for gas users in the Southern States, such as in the case of an expected gas supply shortfall, users that are unable to reach an agreement for gas supply with a southern supplier will need to transport gas from Queensland. In this scenario, gas suppliers in the Southern States would be expected to offer a buyer alternative price in every region in the Southern States.

Further, a southern supplier would be expected to seek a higher price the further away a gas user is from Queensland. Since gas users in Victoria are located further away from Queensland than users in NSW and South Australia, they will likely be offered higher prices than users in those other states. If, in a well-functioning market, a southern supplier were to make an offer above this, then regardless of the location of the buyer it would likely be more economic for the buyer to purchase gas from Queensland and transport it to its location.<sup>39</sup> Therefore, the buyer's alternative price in Victoria is indicative of the maximum price that would be likely to prevail in a well-functioning market.<sup>40</sup>

Conversely, if there were sufficient supply and diversity of suppliers in the Southern States, this would be likely to alter the relative bargaining positions of gas suppliers and gas buyers. Gas buyers would be able to source gas from another supplier in the Southern States rather than having to transport it from Queensland, and increased competition would be likely to lead suppliers to offer prices closer to the 'seller alternative' price. In this scenario, the prices offered by suppliers in the Southern States would be lower the further away the source of supply is from Queensland, but not below the marginal cost of production. The marginal cost of production therefore sets the floor price in any gas supply negotiation.

To meaningfully analyse the level of prices offered in a particular location in the Southern States using this bargaining framework, it is necessary to compare those prices to the buyer/seller alternative range in that specific location.

Chart 2.4 shows quantity-weighted average prices offered by suppliers in the Southern States between January 2017 and January 2019 compared to the range within which gas prices would be expected to fall using the bargaining framework set out above.

The upper end of the range is the buyer alternative in Victoria—indicative of the highest price that would be expected to be offered in the Southern States under the bargaining framework—which is derived by taking averages of expected LNG netback prices at Wallumbilla for 2019 and adding indicative pipeline tariffs to Melbourne. Buyer alternative

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<sup>39</sup> This would depend on whether the buyer is able to acquire capacity on relevant pipelines over the period of supply, as well as the pipeline tariffs that are to be paid.

<sup>40</sup> We note that prices offered to individual buyers may also be influenced by other factors, particularly non-price terms and conditions.

prices in other locations in the Southern States would be expected to lie between LNG netback prices at Wallumbilla and Victorian buyer alternative prices.

The lower end of the range is the seller alternative in Victoria, determined by the higher of:

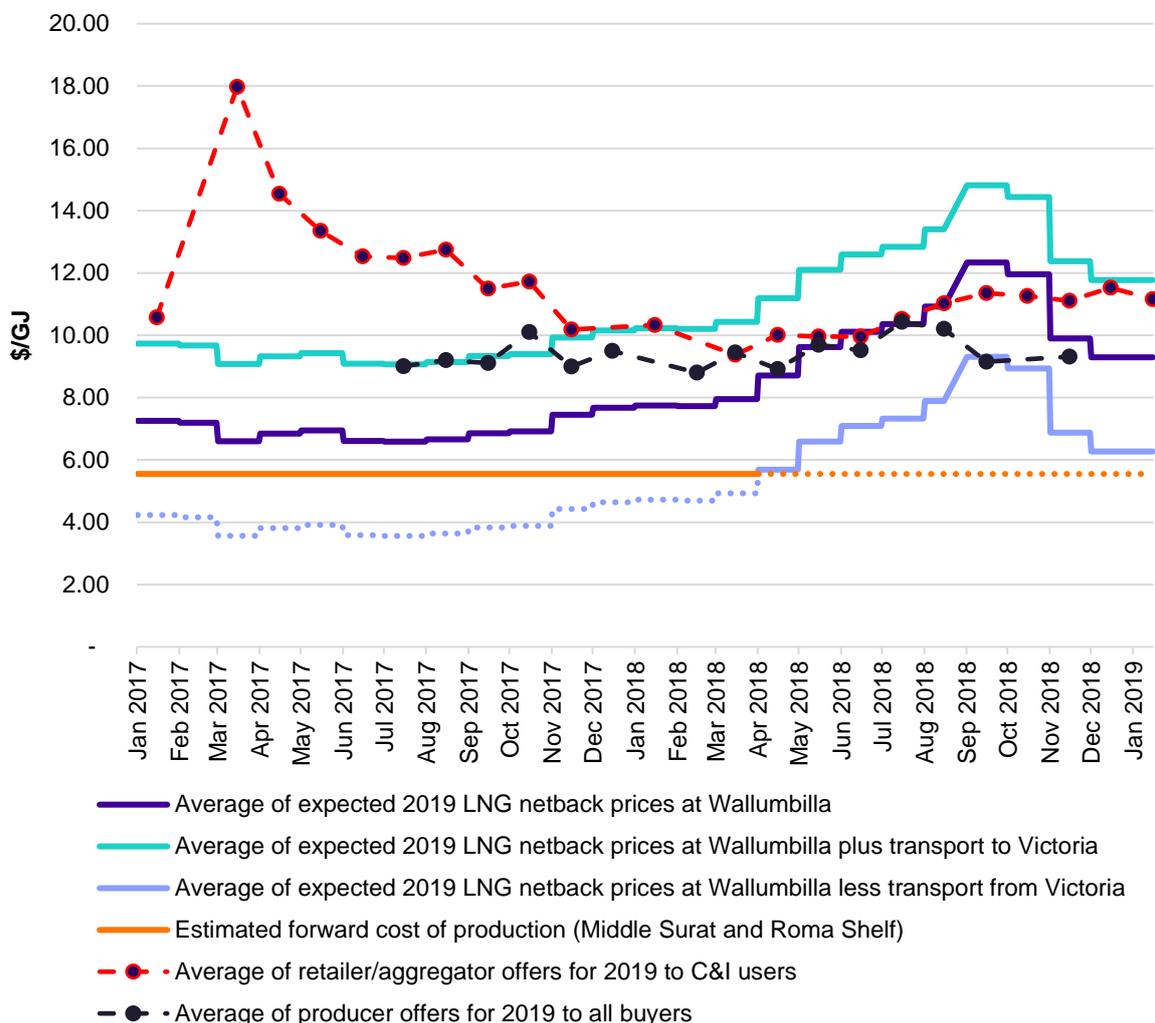
- the averages of expected LNG netback prices at Wallumbilla for 2019 less indicative pipeline tariffs from Melbourne to Wallumbilla<sup>41</sup>
- the cost of production of the marginal source of supply.

We note that the LNG netback prices and buyer and seller alternative prices do not account for other factors that may influence the prices offered to gas buyers, such as flexible non-price terms and conditions in GSAs, the contract length and retailer costs and margins.

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<sup>41</sup> Indicative pipeline tariffs are based on the costs of transporting gas from Wallumbilla to Melbourne via Sydney (for the buyer alternative), and the costs of transporting gas from Melbourne to Wallumbilla via Moomba, including processing costs at Moomba to ensure the gas meets the specifications for conversion to LNG. Costs of transportation between Melbourne and Wallumbilla (via Moomba) for north flowing gas, and between Wallumbilla and Culcairn for south flowing gas are published on the ACCC's website (<https://www.accc.gov.au/system/files/Map-2-A3.pdf>). An indicative tariff from Culcairn to Melbourne is published on APA's website (<https://www.apa.com.au/our-services/gas-transmission/east-coast-grid/victorian-transmission-system/>). Pipeline losses and processing costs at Moomba were published in the ACCC's East Coast Gas Inquiry 2015 final report (<https://www.accc.gov.au/regulated-infrastructure/energy/east-coast-gas-inquiry-2015/report>).

**Chart 2.4: Average of monthly gas commodity prices offered for 2019 supply against contemporaneous expectations of 2019 LNG netback prices (Southern States)**



Source: ICE, Argus, Core Energy, ACCC analysis of information provided by suppliers.

Note: JKM futures prices quoted by ICE before June 2017 related to futures contracts for the first half of 2019 only.

Note: Prices are for gas commodity only. Actual prices paid by users may also include transport and retail cost components. Includes offers for gas supply of at least 12 months duration. Offers before 14 July 2017 are part of multi-year unfulfilled offers for annual quantities of at least 1 PJ. Any offers made prior to 14 July 2017 solely for gas supply in 2019 are not included (ACCC does not have this data). After 14 July 2017, all offers for quantities of at least 0.5 PJ are included.

Note: Prior to March 2018, the seller alternative was below the estimated cost of production (that portion of the seller alternative curve is dotted). In this period, the estimated cost of production would be expected to act as a floor price for the Southern States.

In previous reports, the ACCC noted that averages of prices offered by retailers to C&I gas users in the Southern States were, for most of 2017, well in excess of Victorian buyer alternative prices. Improvements in market conditions over the course of 2017 and early 2018 saw prices offered by retailers in the Southern States fall back into the range between the buyer and seller alternative prices. Since about March 2018, averages of prices offered by retailers, have remained within this range, fluctuating around the expected LNG netback prices at Wallumbilla.

Chart 2.4 shows that, since July 2017, the averages of prices offered by producers has been relatively steady, ranging between about \$8.80-10.40/GJ, while averages of expected 2019 LNG netback prices rose and then fell. By November 2018 (the last month in which offers were made by producers for 2019), producer offers were roughly in line with expected LNG netback prices at Wallumbilla. As with the averages of prices offered by retailers, the averages of prices offered by producers have remained within the range of the buyer and seller alternative prices.

As explained in section 2.2.1, there are a number of reasons why averages of prices offered by suppliers in chart 2.4 might differ to expectations of LNG netback prices at various points in time. However, there are further points of relevance with respect to the comparison of prices in the Southern States presented in chart 2.4.

As explained in box 2.4, where a price actually achieved in a negotiation will fall within the buyer/seller alternative range, depends on a range of factors, including the expectation of the parties about supply and demand dynamics and the location of the buyer. The supply-demand balance in the Southern States has been quite tight over the period in chart 2.4, so offers made at different points in time may reflect, amongst other things, different expectations about the supply outlook. In addition, the chart aggregates offers made by suppliers to users located in different regions of the Southern States. The number of offers made in some months is relatively small, so changes in price averages from month to month could be influenced by the location of the users to whom the offers were made in those months.

Because the number of offers made in late 2018 was small, it is too early to tell whether the increase in the averages of retailer price offers, towards the buyer alternative, is part of a longer-term trend. Volatility in LNG prices, and the sharp fall in LNG netback and buyer/seller alternative prices towards the end of 2018, could, for instance, explain why averages of price offers made by retailers were close to the buyer alternative in late 2018. It may also reflect that sudden changes in LNG netback prices will take time to flow through to formal offers for gas supply. The ACCC will now shift its focus to offers for supply in 2020 and will continue to monitor offers made by both producers and retailers.

As is the case for offers from Queensland producers, offers from producers in the Southern States are well in excess of Core Energy's estimated forward cost of production of the marginal source of supply in the east coast (by about \$3.60/GJ over the second half of 2018).

### 2.3. Prices agreed under GSAs for 2019 and 2020

This section analyses GSAs for supply in 2019 and 2020 that were executed between 1 January 2017 and 23 January 2019.

Box 2.5 below sets out the ACCC's approach to reporting on prices agreed under longer-term GSAs.

### **Box 2.5: Approach to reporting on prices agreed under GSAs**

The information in this box should be read in conjunction with information in box 1.1. The following also applies to the analysis of prices agreed under GSAs:

- For the purpose of the analysis of producer prices, we have included GSAs executed with all counterparties, while for the purpose of the analysis of retailer prices, we have only included GSAs executed with C&I gas users.
- In contrast to the analysis of offers and bids in section 2.1 above, we estimated prices under GSAs using assumptions relating to key variables (oil prices, foreign exchange rates and CPI) based on the latest market expectations for those variables for 2019 and 2020 (to allow us to report on prices that are currently expected to be paid under GSAs in 2019 and 2020).<sup>42</sup>
- These market expectations have been relatively stable since we last reported on GSA prices in December. However, realised prices may differ from expected prices as the relevant economic variables are subject to change.

Table 2.5 shows averages of gas prices expected to be paid for supply in 2019 and 2020 under GSAs entered into by producers. Table 2.6 shows averages of gas prices expected to be paid for supply in 2019 and 2020 under GSAs entered into by retailers. The prices in these tables are not directly comparable to the prices previously reported in the December 2018 report due to marginally changed pricing assumptions. Our assumptions for the price of oil, foreign exchange rate and consumer price index have been updated.

C&I gas users are now largely contracted for 2019. However, the number of GSAs entered into for 2020 is roughly half that for 2019, indicating that there is likely to be further contracting for 2020 supply throughout 2019.<sup>43</sup>

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<sup>42</sup> In all estimates of 2019 and 2020 GSA prices in this report, the following assumptions were made, where relevant:

- Consistent with Commonwealth Treasury methodology, the AUD/USD exchange rate for 2019 is expected to vary around the current rate. The exchange rate assumption applied to GSAs in this report is 71.46 US cents to the Australian dollar. It is based on the monthly rate published by the RBA for February 2019.
- The expected Brent crude oil price for 2019 and 2020 is equal to the average price of 2019 and 2020—dated futures contracts quoted by CME Group on.
- The CPI assumptions used to estimate GSA prices in this report are based on actual CPI where available and 2.5 per cent thereafter (source: ABS).

<sup>43</sup> Producer prices are reported with reference to the state in which the gas is produced. Where a producer may be supplying a buyer with gas from more than one state, it is assumed that the closest production source to the specified delivery point is the source of the gas. For GSAs executed from 31 August 2018, we have asked producers to identify the most likely production sources.

**Table 2.5: Expected 2019 and 2020 wholesale producer gas commodity prices in the East Coast Gas Market (under GSAs executed between 1 January 2017 and 23 January 2019)<sup>44</sup>**

Origin of producer supply	Period of Supply	Average gas commodity price (\$/GJ)	Gas commodity price range (\$/GJ)
Producers (QLD)	2019	8.55	7.63–10.00
Producers (VIC, SA)	2019	9.53	8.71–11.12
Producers (QLD)	2020	8.92	7.75–9.58
Producers (VIC, SA)	2020	9.77	8.92–10.97

Source: ACCC analysis of information provided by suppliers.

Table 2.5 shows that in the period between 1 January 2017 and 23 January 2019, the average of prices in GSAs executed by producers for 2019 supply in the Southern States is higher than the average of prices in GSAs executed by producers in Queensland. Both the average prices and the differences between regions are consistent with those reported in July and December 2018. The range of agreed prices for gas supply in all regions has increased relative to the ranges previously reported (from \$0.89 to \$2.37 for Queensland and from \$2 to \$2.05 for the Southern States). The increases in the price ranges is due to the inclusion of newer, higher priced GSAs. However, these higher priced GSAs are not large enough to cause large changes to the average of prices.

As we reported in December 2018, the price difference between Queensland and the Southern States is due to higher cost GSAs for gas supply from Victorian producers to retailers. Victorian producer GSAs have remained at higher prices, on average, than GSAs from producers in the other states.

The average of prices in Queensland and Victoria for supply in 2020 are higher than the equivalent prices for supply in 2019 while the prices in South Australia have marginally declined. The increase in prices in Queensland and Victoria is due to older lower priced legacy contracts that are due to end in 2019.

As noted in Box 1.1, we are not reporting GSA prices involving producers in the Northern Territory. So far, only a small number of GSAs have been struck for supply from Northern Territory basins into the east coast. After factoring in transport cost, Northern Territory producer prices are similar to east coast producer prices.

<sup>44</sup> Some gas supply agreements reflect higher per GJ pricing in the table due to delivery being significantly weighed to the winter months, when domestic demand is higher. It is this bespoke load profile that contributes to the overall contract price, making it not directly comparably to other contracts.

**Table 2.6: Expected 2019 and 2020 retailer gas commodity prices for supply to C&I gas users (under GSAs executed between 1 January 2017 and 23 January 2019)**

Destination of retail supply	Period of supply	Average gas commodity price (\$/GJ)	Gas commodity price range (\$/GJ)
Retailers (QLD)	2019	10.98	9.85–11.60
Retailers (VIC)	2019	10.61	9.00–12.51
Retailers (NSW)	2019	9.70	9.00–11.78
Retailers (VIC, QLD, NSW)	2020	10.05	9.44–10.73

Source: ACCC analysis of offer and bid information provided by suppliers.

Table 2.6 shows that the averages of gas commodity prices in GSAs between Retailers and C&I gas users across the Victoria, New South Wales and Queensland are higher than the averages of gas commodity prices in GSAs entered into by producers. This observation is a persistent trend in our reporting. There were insufficient GSAs entered into by retailers for the supply of gas in 2020 to report a meaningful average of prices disaggregated by state.

We also continue to observe the trend of average retailer prices in Queensland being higher than the averages of retailer prices in other regions. Queensland retailer prices are also higher than the average of producer prices in Queensland. The difference between Queensland and the other regions has reduced since we reported in December 2018. Queensland retailer prices are higher due to older oil linked GSAs, retailers have more recently entered GSAs to supply gas at lower fixed prices which has reduced the difference between Queensland and the other states.

The average of all retailer prices for 2020 is lower than the average of Victorian and Queensland retailer prices for 2019, but higher than the New South Wales average for 2019. In Queensland, higher priced retailer GSAs on foot in 2019 have not continued into 2020. The prices of Queensland GSAs on foot in 2020 are in a tight range reflecting a small number of retailers entering GSAs at similar prices. In New South Wales, the addition of some higher priced GSAs and CPI linked increases in existing multi-year GSAs, accounts for the higher average prices in 2020.

Table 2.7 shows expected gas commodity prices in producer GSAs (all buyers) and retailer GSAs (C&I gas users) executed between 31 August 2018 and 23 January 2019 for gas supply in 2019. The 2020 averages have not been included in this table because there are currently only a small number of applicable GSAs.

**Table 2.7: Expected gas commodity prices for supply by producers (to all buyers) and retailers (to C&I gas users) in the East Coast Gas Market in 2019 (under GSAs executed between 31 August 2018 and 23 January 2019)<sup>45-46</sup>**

Category of supplier	Average gas commodity price (\$/GJ)	Gas commodity price range (\$/GJ)
Producer (QLD)	9.86	9.50–10.00
Producer (VIC, SA)	9.70	8.98–11.12
Retailers (VIC, QLD, NSW)	10.63	10.35–11.78

Source: ACCC analysis of offer and bid information provided by suppliers.

Table 2.7 shows that the averages of prices for the most recently executed producer GSAs in the Southern States and Queensland are relatively close, falling within a range of 16 cents. The average of prices for recent 2019 retailer GSAs is consistent with those observed earlier. Some recent retailer GSAs in NSW have involved a larger number of small demand centres aggregated into a single contract. This type of aggregated GSA contains higher gas prices than GSAs with large C&I gas users.

The average of prices under recently executed Queensland producer GSAs is significantly higher, and closer to the producer prices observed in Victoria and South Australia, than prices under Queensland producer GSAs executed earlier.

### 3. Price expectations for 2019 and 2020

#### 3.1. LNG netback price expectations for 2019 and 2020

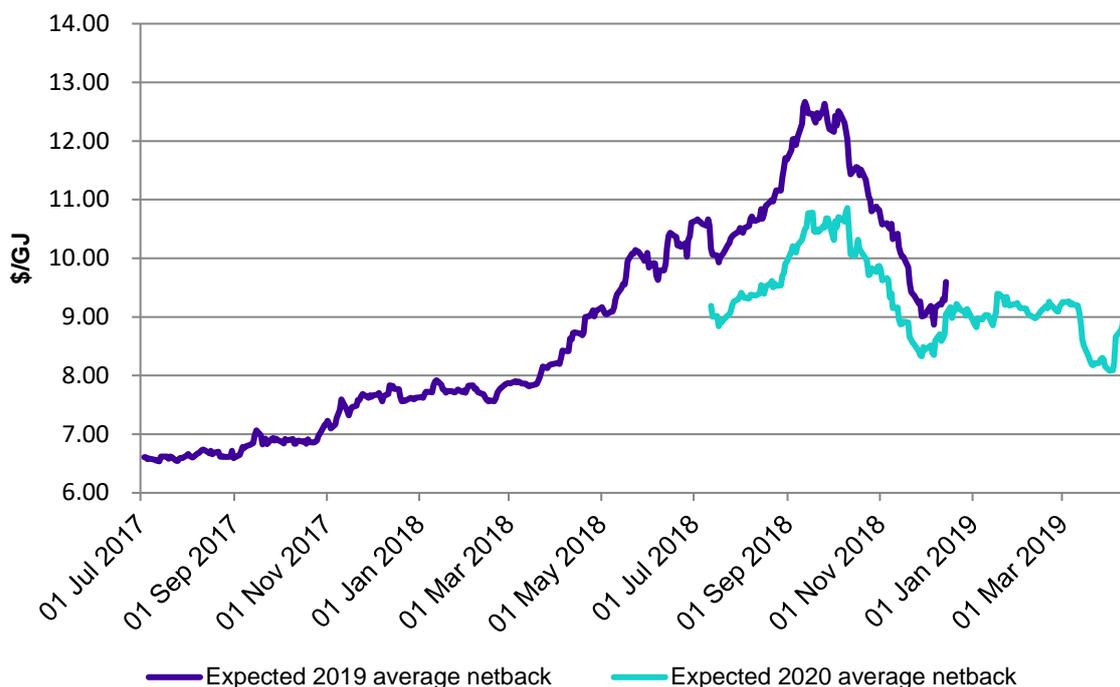
Over the past 12 months, there has been significant volatility in Asian LNG prices, affecting expectations of LNG netback prices. Chart 3.1 shows the fluctuations in expected LNG netback prices at Wallumbilla in the period between 1 January 2018 and mid-April 2019.

We calculated the LNG netback prices in the chart using the approach set out in section 2.2, with one difference—each point in the chart represents a daily average of expected LNG netback prices across the entirety of 2019 or 2020 (compared to a monthly average in section 2.2). The chart below differs from the ACCC’s regular publication of LNG netback prices, in that it shows how expectations of LNG netback prices for the entirety of 2019 and 2020 have changed over time, rather than showing expected forward prices for each month.

<sup>45</sup> Pricing assumptions applied to GSAs in this section are the same as applied in section 3.4. Prices are for gas commodity charges only; actual prices paid by users may also include transport and retail cost components.

<sup>46</sup> Some gas supply agreements reflect higher per GJ pricing in the table due to delivery being significantly weighed to the winter months, when domestic demand is higher. It is this bespoke load profile that contributes to the overall contract price, making it not directly comparably to other contracts.

**Chart 3.1: Expected LNG netback prices at Wallumbilla for 2019 and 2020**



Source: ICE, Argus, ACCC analysis of information provided by suppliers.

Note: Expected LNG netback prices for 2019 are included until 14 December 2018. From 15 December 2018 onwards, forward LNG prices are not available for January 2019 (and an average of prices for the entirety of 2019 cannot be calculated). Expected LNG netback prices for 2020 are included from 13 July onwards. Forward shipping estimates were not available for all of 2020 prior to 7 December 2018. Expected LNG netback prices for 2020 prior to 7 December 2018 use a combination of 2019 and 2020 forward shipping costs as an input.

Chart 3.1 shows that expected LNG netback prices at Wallumbilla for 2019 have changed significantly over 2018. Expected LNG netback prices for 2019 trended upwards from around \$7.60/GJ at the start of 2018 to over \$12.50/GJ in September 2018, and then decreased to just over \$9.50/GJ by mid-December 2018 (the last date for which LNG futures were published for the entirety of 2019).

Expected LNG netback prices for 2020 followed a similar trend, falling from \$10.78/GJ in early October to \$8.91/GJ in mid-April 2019.

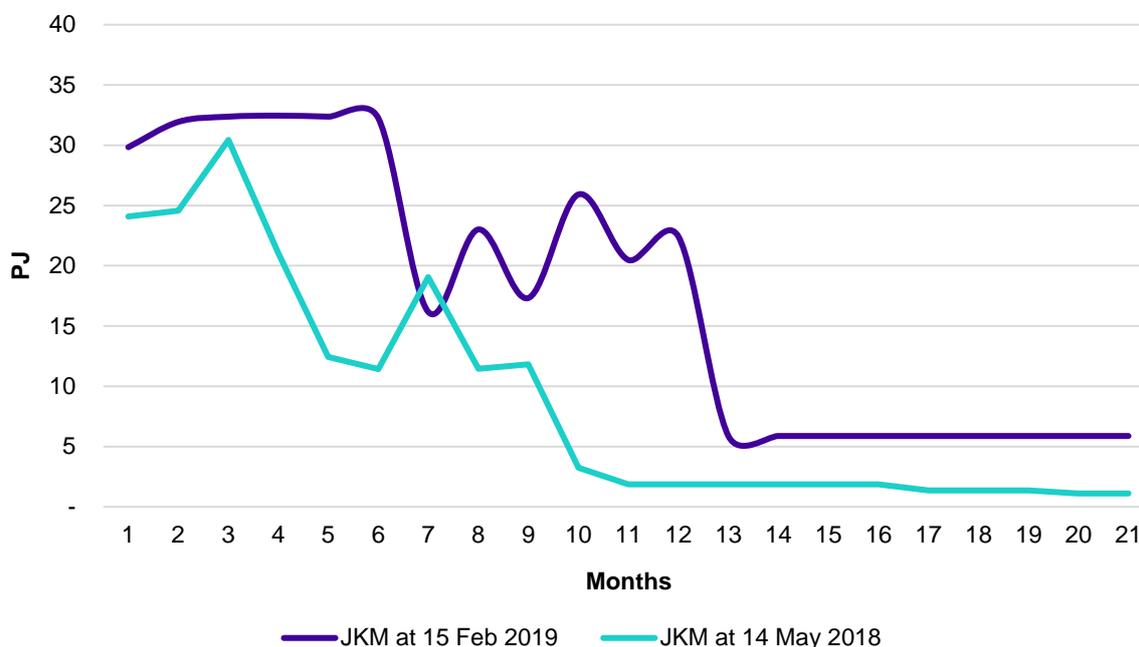
These changes in expectations of Asian LNG spot prices over a relatively short period show the degree of price volatility in the LNG market. It emphasises that sudden and unexpected changes in LNG supply and demand dynamics can have significant short-term impacts on price expectations.

In addition, the level of liquidity in LNG markets has implications for the reliability of published future price estimates—a market with high liquidity is more likely to reflect the future price expectations of all players within a market, rather than just a subset. A key limitation of LNG markets, and thus the LNG netback price series published by the ACCC, is that the JKM (the price marker on which the LNG netback price series is based) has historically been relatively illiquid beyond a 6-month forward period. However, the level of liquidity in the LNG futures markets has changed markedly over recent months.

Chart 3.2 presents the amount of open interest—which is a measure of the quantity of gas being traded in future periods—in JKM futures traded on the Intercontinental Exchange over a forward period. The vertical axis represents the open interest, in PJ, in each of the forward

months. The total area under the curves gives the total open interest over the forward period.

**Chart 3.2: JKM futures open interest**



Source: ICE.

The chart shows that the total amount of open interest has increased between May 2018 and April 2019, with JKM futures becoming more liquid over a longer forward period. Liquidity for JKM futures in April 2019 remained largely above 20 PJ for about 12 months, whereas liquidity dropped off to around 10 PJ after four months in JKM futures in May 2018.

Increases in liquidity in LNG markets could pave the way for greater take up of domestic GSAs with pricing mechanisms linked to Asian LNG spot prices. More liquidity could also benefit gas users by giving them greater scope to hedge against future movements in LNG spot prices.

### 3.2. Victorian wholesale gas futures

The Declared Wholesale Gas Market (DWGM) allows market participants to trade in futures contracts for gas in Victoria. While recent months have seen a relative decline in trading activity in gas futures relative to the final quarter of 2018, the Victorian gas futures market continues to deepen.

Trading activity in the final quarter of 2018 was relatively strong, with monthly trades as follows:

- in October 2018, 133 quarterly and 25 yearly contracts (for 2019) were traded
- in November 2018, 179 quarterly and 25 yearly contracts (for 2019) were traded
- in December 2018, 39 quarterly and 5 yearly contracts (for 2019) were traded.

There were fewer trades for quarterly contracts in the first quarter of 2019—60 in January, 20 in February and 50 in March—and no yearly contracts traded. While this is a reduction in

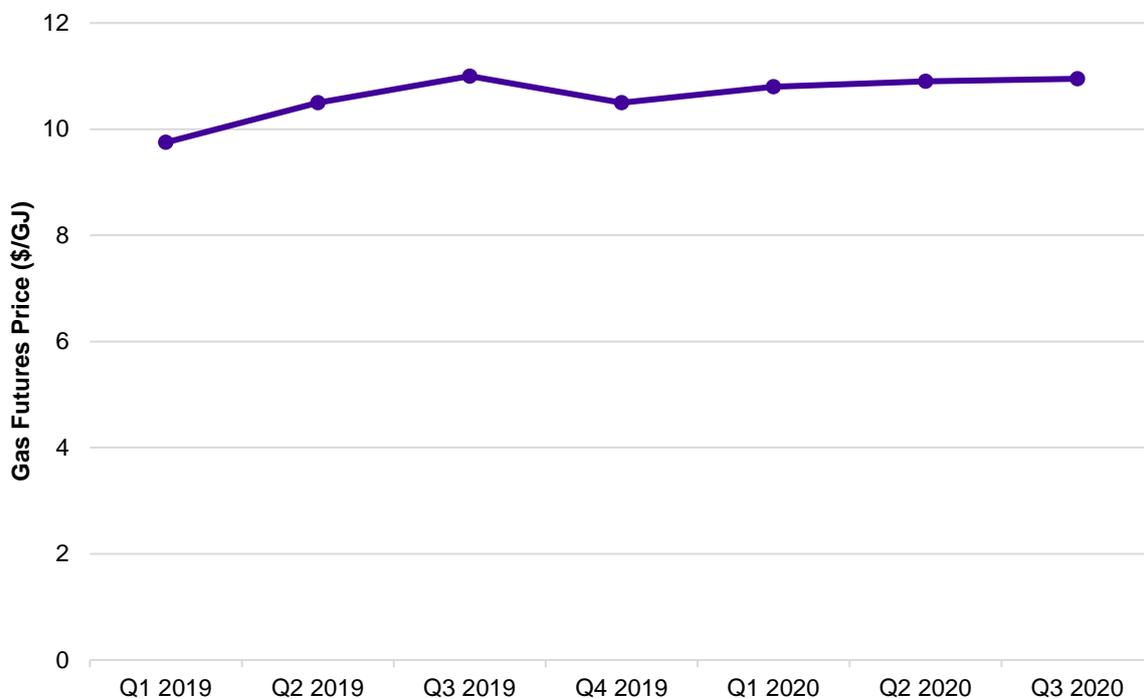
trading activity compared to the last quarter of 2018, it still represents substantial growth, as there were no trades of quarterly or yearly contracts this time last year.

In total, in the 12 months from 14 March 2018 to 13 March 2019, 691 quarterly contracts and 70 yearly contracts were traded amounting to approximately 8.86 PJ of gas.

The amount of open interest in quarterly futures contracts has also continued to grow since the ACCC last reported on gas futures, increasing from 415 outstanding contracts as at the time of the December 2018 report to 522 outstanding contracts as at the time of this report. This, along with the year on year increase in trading activity, suggests that the Victorian gas futures market is continuing to become more liquid.

The futures prices shown in chart 3.3 indicate that market participants expect gas prices in the Victorian Declared Wholesale Gas Market (DWGM) to remain relatively stable throughout 2019 and through to Q3 2020. Future spot prices are expected to remain between \$10/GJ and \$11/GJ in the period from Q2 2019 to Q3 2020.

**Chart 3.3: Victorian DWGM futures prices from Q1 2019 to Q3 2020**



## 4. Gas prices paid prior to 2019

### 4.1. Gas prices paid under long-term GSAs in the East Coast Gas Market in 2015–2018

In this section, we update our two series that track the prices that were invoiced under GSAs by a range of suppliers in the East Coast Gas Market over the period 2015–2018. The first series is based on invoices that were issued by producers to a range of gas buyers, including retailers, C&I gas users and gas powered generators (GPGs). The second series is based on invoices that were issued by retailers to C&I gas users.

Both series were most recently presented in our December 2018 report, and covered the period from Q2 2015 to Q2 2018 inclusively. In this report, both series have been extended using newly obtained information to include data for the second half of 2018.

Box 4.1 below sets out the ACCC's approach to reporting on invoiced price series.

#### **Box 4.1: Approach to reporting invoiced prices series**

The information in this box should be read in conjunction with information in box 1.1. The following also applies to the invoiced prices reported in this section.

- In the producer invoice series, we have included invoices under all GSAs entered into by producers. This includes some GSAs that were for a term of less than one year and an annual contract quantity less than 0.5 PJ.
- From December 2017, the producer invoiced price series includes transaction notices that were for a term of one year or more and an annual contract quantity more than 0.5 PJs. Transaction notices are a form of GSA that may be entered into by parties that have a master agreement in place, which sets out the general terms and conditions of supply. While transaction notices have historically accounted for a relatively small proportion of gas sales, their use has increased over recent years.
- The retailer invoice series includes invoices under GSAs that are for a term of three months or longer and that are for an annual contract quantity of at least 0.5 PJ.
- The prices presented in this section are based on invoices issued under all applicable GSAs in effect in a particular quarter (unless otherwise specified). This includes lower prices payable under a number of legacy GSAs that were entered into prior to recent changes to the East Coast Gas Market. The average prices presented in the invoiced prices series are therefore lower than the prices that have been agreed upon more recently. Some of the charts presented in this section include invoiced prices for GSAs that were entered into since January 2017, which are more comparable to the recently agreed prices.

#### **4.1.1. Gas prices paid to producers under long-term GSAs**

Chart 4.1 shows the quantity-weighted average quarterly gas prices that gas buyers in the East Coast Gas Market paid to producers in the Surat/Bowen,<sup>47</sup> Cooper and Gippsland/Otway/Bass basins throughout 2015–2018.<sup>48</sup> As noted in box 1.1, invoices issued by Northern Territory producers are excluded from this analysis. Invoiced prices are allocated to individual basins on the basis of the gas delivery point specified in invoices.

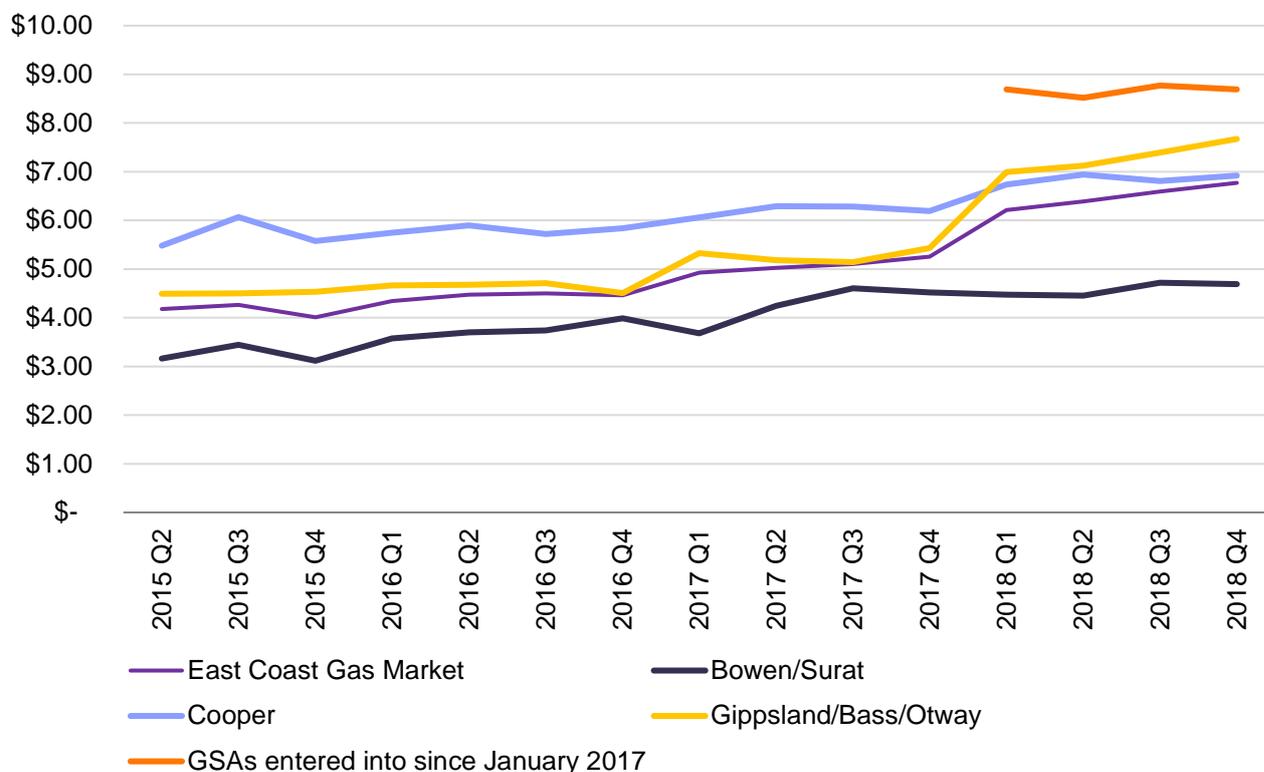
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<sup>47</sup> The Surat/Bowen basin price reflects producers that are capable of supplying gas to Wallumbilla.

<sup>48</sup> Due to the small number of producers in the Otway, Bass and Gippsland basins, a single average price has been calculated to represent the prices charged by the producers in these basins.

As in the previous reports, we have included a separate line to show prices paid under more recent GSAs. For this purpose, the ACCC have included only GSAs entered into since January 2017. As this is a different cut-off date to the previous reports, these averages are not directly comparable to the averages in the previous reports.

**Chart 4.1: Average of gas commodity prices invoiced by producers (\$nominal/GJ)**



Source: ACCC analysis of information provided by producers.

Note: The data underlying this chart is presented separately in table A.1 in appendix A.

Chart 4.1 shows that prices paid across the East Coast Gas Market have continued to increase throughout 2018. The average of prices across the East Coast Gas Market in Q4 2018 (\$6.77/GJ) was 29 per cent higher than Q4 2017 (\$5.25/GJ) and six per cent higher than Q2 2018 (\$6.39/GJ).

Notably, the average of prices paid to producers in the Gippsland, Bass and Otway basins has increased by 41 per cent from Q4 2017 to Q4 2018. As at the end of 2018, Victorian producers received, on average, higher prices than other producers in the East Coast Gas Market.

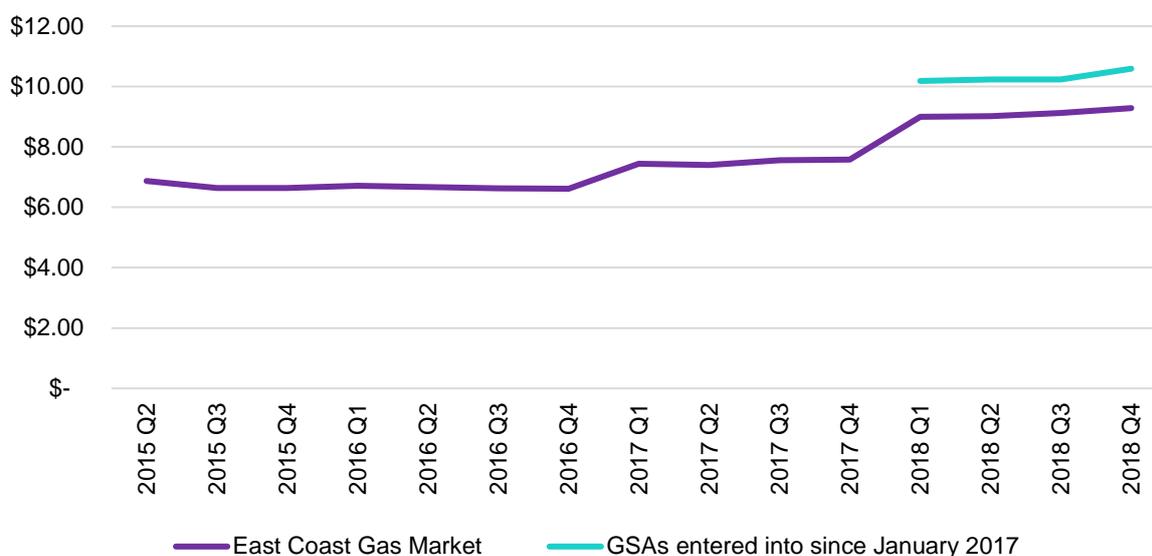
A number of relatively low-priced legacy GSAs expired at the end of 2017, with several newer and higher-priced GSAs commencing at the start of 2018. As more legacy GSAs expire, the difference between the weighted average quarterly prices under all GSAs on foot and recent GSAs will narrow. As at Q4 2018, the average of prices paid under GSAs executed since 1 January 2017 was \$1.92/GJ higher than the average of prices paid under all GSAs on foot in the East Coast Gas Market.

#### 4.1.2. Gas prices paid by C&I gas users to retailers under long-term GSAs

Chart 4.2 shows the quantity-weighted average prices that C&I gas users across the East Coast Gas Market paid to retailers in the period Q2 2015–Q4 2018, separately presenting the prices paid under more recent GSAs entered into since January 2017. As this is a different cut-off date to the previous reports, these averages are not directly comparable to the averages reported in the prior reports.

The quantity-weighted averages have been calculated using prices specified in invoices. For 2015 and 2016, invoices under GSAs that were for an annual contract quantity of at least one PJ are included. From 2017, the series was expanded to include GSAs with an annual contract quantity of at least 0.5 PJ.

**Chart 4.2: Average of gas commodity prices invoiced by retailers to C&I Gas users (\$nominal/GJ)**



Source: ACCC analysis of information provided by retailers.

Note: Average gas commodity prices up to 31 December 2016 are for GSAs with annual contract quantities of at least 1 PJ; from 1 January 2017, average gas commodity prices are for GSAs with annual contract quantities of at least 0.5 PJ.

Note: The data underlying this chart is presented separately in table A.2 in appendix A.

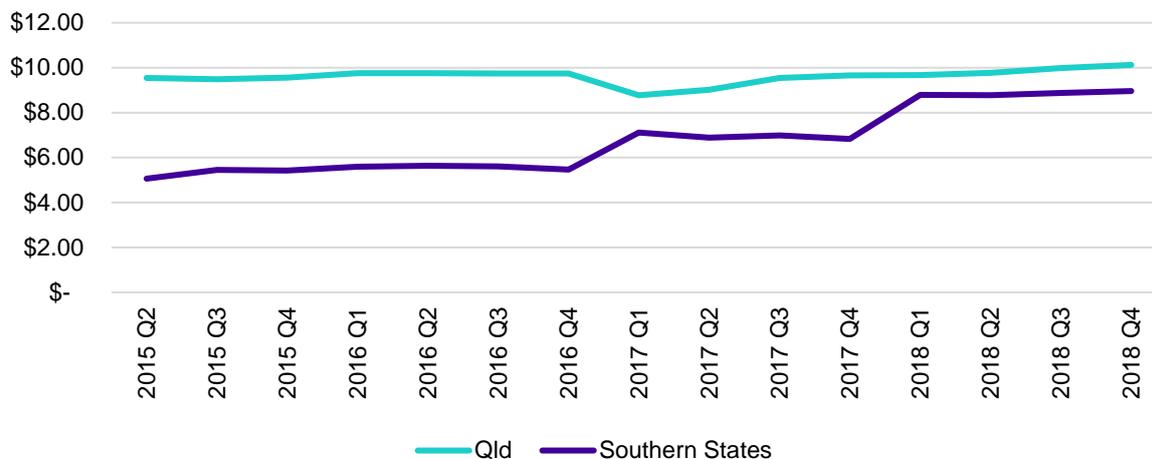
Chart 4.2 shows that the average of prices paid by C&I gas users to retailers in the East Coast Gas Market in Q4 2018 (\$9.29/GJ) was 23 percent higher than Q4 2017 (\$7.58/GJ) and three per cent higher than Q2 2018 (\$9.02/GJ).

The gap between the averages of prices under recent retailer GSAs (entered into since January 2017) and prices under all the retailer GSAs on foot in the East Coast Gas Market has narrowed to \$1.31/GJ in Q4 2018. This gap is narrower than for producer GSAs, as there are fewer long-term legacy retailer GSAs still on foot.

Chart 4.3 breaks down the quantity-weighted average of prices paid by C&I gas users in Queensland and the Southern States.<sup>49</sup>

<sup>49</sup> The Southern States include Victoria, NSW, ACT, Tasmania and South Australia.

**Chart 4.3: Average of gas commodity prices invoiced by retailers to C&I gas users, by region (\$nominal/GJ)**



Source: ACCC analysis of information provided by retailers.

Note: Averages of gas commodity prices up to 31 December 2016 are for GSAs with annual contract quantities of at least 1 PJ; from 1 January 2017, averages of gas commodity prices are for GSAs with annual contract quantities of at least 0.5 PJ.

Note: The data underlying this chart is presented separately in table A.3 in appendix A.

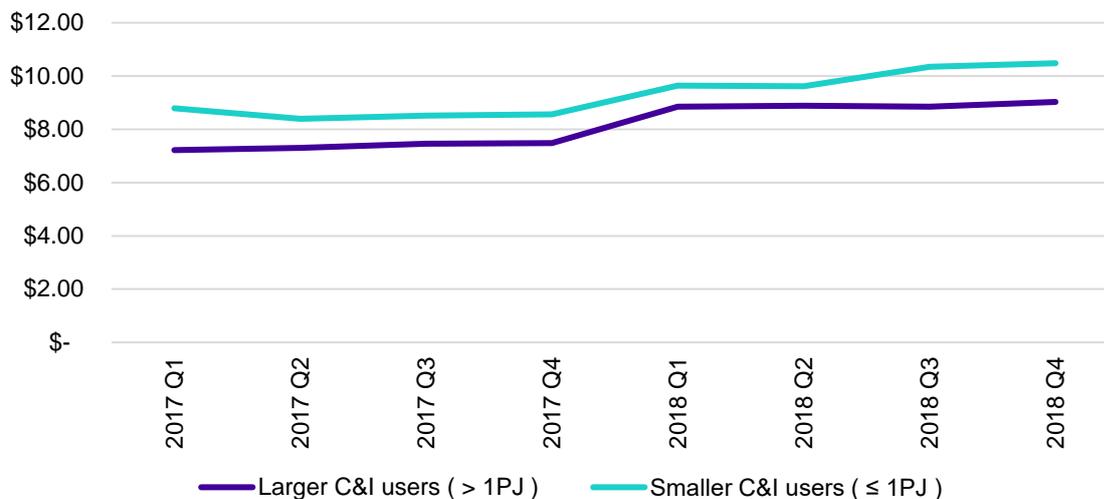
Chart 4.3 shows that from Q4 2017 to Q4 2018, the average of prices paid by C&I gas users to retailers in the Southern States increased by 31 per cent from \$6.83/GJ to \$8.96/GJ. Victorian C&I gas users, in particular, experienced an increase of 42 per cent over this period.

A number of C&I gas users in NSW are not yet paying the higher prices observed recently, as they entered into their GSAs prior to January 2017. In Q4 2018, only 19 per cent of the invoices issued to NSW C&I users were under GSAs entered into since January 2017, compared to more than 60 per cent for C&I gas users in other states.

Chart 4.3 shows that C&I gas users in Queensland have, on average, paid higher prices to retailers than C&I gas users in the Southern States. This is because there are fewer retailer GSAs in Queensland than in the Southern States, thus the higher priced oil linked contracts has a disproportionate effect on the quantity-weighted price paid by Queensland C&I gas users. The gap between the prices in the different regions has narrowed. As at Q4 2018, the average of prices paid by C&I gas users in the Southern States was only \$1.16/GJ lower than that paid by C&I gas users Queensland, compared to the difference of \$4.48/GJ in Q2 2015.

Chart 4.4 compares the prices paid to retailers by C&I gas users that purchased larger quantities with those that purchased smaller quantities. For the purpose of this chart, C&I gas users that were invoiced for more than one PJ in the calendar year were classified as large users, while those that were invoiced for one PJ or less were classified as smaller users. For those C&I gas users that were supplied gas across a number of sites, the classification was based on the total quantity of gas invoiced across all sites.

**Chart 4.4: Average of gas commodity prices invoiced by retailers, by quantity invoiced to C&I gas users (\$/nominal/GJ)**



Source: ACCC analysis of information provided by retailers.

Chart 4.4 shows that over the past 12 months, smaller C&I gas users paid, on average, 13 per cent more than larger gas users. The difference has increased in the second half of 2018, from nine per cent (\$0.79/GJ) in Q2 2018 to 16 per cent (\$1.45/GJ) in Q4 2018.

This may reflect that larger gas users have more bargaining power when negotiating GSAs with retailers, due to larger contracts having more value to retailers.<sup>50</sup> The prices paid by the smaller C&I gas users in Q4 2018 are closer to the prices observed in recently executed GSAs.

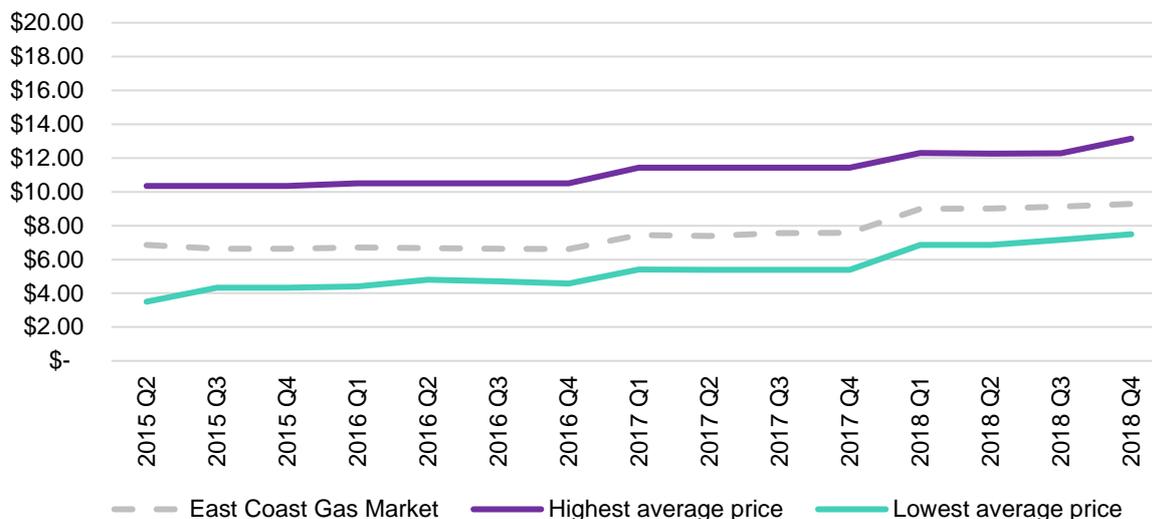
Chart 4.5 shows the highest and lowest quarterly averages of prices paid by C&I gas users in the East Coast Gas Market to retailers.

This chart was developed as follows:

- A quantity-weighted average price was calculated for each C&I gas user for each quarter using all the invoices issued to each C&I gas user by retailers in each quarter.
- If gas was not supplied to a C&I gas user during a particular quarter, that C&I gas user was excluded from the analysis for that quarter.
- To construct the top line in the chart, the highest quantity-weighted average price paid by any C&I gas user in that quarter was used (the identities of C&I gas users whose averages were used sometimes varied from quarter to quarter).
- To construct the bottom line in the chart, the lowest quantity-weighted average price paid by any C&I gas user in that quarter was used (the identities of C&I gas users whose averages were used sometimes varied from quarter to quarter).

<sup>50</sup> There are other factors, such as load factor, that contributes to the difference in the pricing of gas.

**Chart 4.5: Highest and lowest quarterly averages of gas commodity prices invoiced by retailers to individual C&I gas users (\$nominal/GJ)**



Source: ACCC analysis of information provided by retailers.

Note: Average of gas commodity prices up to 31 December 2016 are for GSAs with annual contract quantities of at least 1 PJ; from 1 January 2017, average of gas commodity prices are for GSAs with annual contract quantities of at least 0.5 PJ.

Chart 4.5 shows that there is significant difference between the highest and lowest prices paid by C&I gas users in the East Coast Gas Market to retailers. From Q2 2015 to Q4 2017, the average difference between the highest and lowest average price was \$6.06/GJ. In 2018, the average difference has narrowed, but remained around \$5.40/GJ.

The chart also shows that the difference from the mean varies for the highest quarterly prices compared to the lowest quarterly prices. For example, in Q4 2018, the highest average of quarterly prices (\$13.14/GJ) was \$3.85/GJ higher than the East Coast Gas Market average (\$9.29/GJ), whereas the lowest average of quarter prices (\$7.49/GJ) was only \$1.80 lower than the East Coast Gas Market average.

## 4.2. Gas prices paid under short-term GSAs in Queensland in 2018

A number of market participants source at least some of their gas from the short-term trading markets. This section compares short-term trades made at the Wallumbilla Gas Supply Hub (GSH) with short-term trades made bilaterally in Queensland to assess whether prices on Wallumbilla GSH are a good indicator of short-term market prices in Queensland.<sup>51</sup>

The Wallumbilla GSH is located at the junction of three important gas pipelines, which connect gas markets in Queensland, New South Wales, South Australia and Victoria. The Wallumbilla GSH is operated by the AEMO using a brokerage model, where anonymous bids and offers are matched to produce trades. Participation in the Wallumbilla GSH is voluntary, and requires the payment of annual membership and licence fees.

<sup>51</sup> Short-term bilateral trades refers to gas supply agreements with a term of less than 12 months involving the physical delivery of gas, and does not include gas swap agreements.

Five products are available via the Wallumbilla GSH: Balance-of-Day, Day-Ahead, Daily, Weekly and Monthly.<sup>52</sup> These vary by the length of gas supply involved as well as how far in advance each is available. The maximum time in advance a product on the Wallumbilla GSH can be traded is three months.

Box 4.2 sets out the ACCC's approach to reporting on prices agreed under short-term GSAs.

#### **Box 4.2: Approach to reporting on short-term GSAs**

The information in this box should be read in conjunction with information in box 1.1. The following also applies to the analysis of prices agreed under short-term GSAs:

- For the purpose of the analysis, we have included all GSAs for a term of less than one year involving the physical delivery of gas, this includes contracts with a total contract quantity of less than 0.5 PJ, but does not include gas swap agreements.<sup>53</sup>
- Where necessary, the gas price for short-term GSAs has been estimated using the pricing mechanisms specified in each GSA along with assumptions relating to key variables (oil prices and foreign exchange rates) based on market expectations for those variables at the time the GSA was executed.<sup>54</sup> Realised prices may differ from expected prices as the relevant economic variables are subject to change.

Table 4.1 compares the average price<sup>55</sup>, total traded quantities and the total number of trades made bilaterally in Queensland and at the Wallumbilla GSH in 2018.

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<sup>52</sup> Participants can also make bids and offers for these products at either the Wallumbilla or South East Queensland locations. We have included both locations in our analysis and therefore we do not distinguish between them.

<sup>53</sup> Trades which are agreed privately and then settled via the Wallumbilla GSH are not included. These are referred to as 'off market' trades in statistics published by AEMO and the AER. In the analysis in this report, trades settled via the Wallumbilla GSH are compared to trades settled privately.

<sup>54</sup> In all estimates of short-term GSA prices in this report, the following assumptions were made, where relevant:

- the expected AUD/USD exchange rate for the supply period is equal to the five-day average rate for the day on which the agreement was executed (source: RBA)
- the expected Brent crude oil price for the supply period is equal to the average price of futures contracts traded on the day for the supply period on which the agreement was executed (source: Bloomberg)
- the expected JKM LNG price for the supply period is equal to the average price of futures contracts for the supply period traded on the day on which the agreement was executed (source: ICE)

<sup>55</sup> Throughout this section the term 'average price' means a quantity-weighted average price, where the quantity used is the total contracted quantity.

**Table 4.1: Prices, traded quantities and the number of trades made at the Wallumbilla GSH and bilaterally in Queensland, 2018**

<b>2018</b>	<b>Wallumbilla GSH</b>	<b>Bilateral</b>
Average gas commodity price (\$/GJ)	9.01	9.84
Total traded quantities (PJ)	16.23	37.23
Total number of trades	1912	70

Source: ACCC analysis of information provided by gas suppliers, AER, AEMO.

Note: Bilateral trade figures exclude trades made between related parties and those with a take-or-pay of less than 80 per cent.

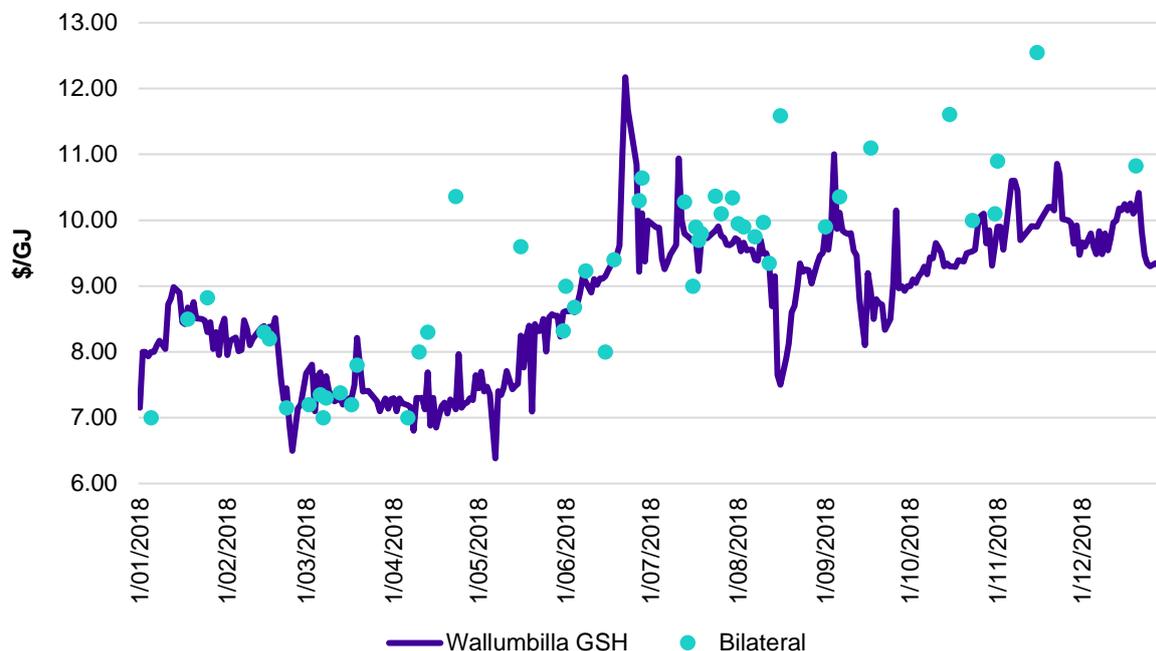
Note: Figures for the Wallumbilla GSH reported here are not directly comparable with figures published in previous interim reports, or with figures published by the AEMO or the AER. This is because we use a different measure of quantity when weighting prices.

The table shows that, on average, the prices paid for gas under trades entered into through the Wallumbilla GSH and those entered into bilaterally were similar, with any differences likely due to the differences in the available level of flexibility and term lengths.

However, there were significant differences in the number of short-term trades conducted and quantities traded. While 96 per cent of all short-term trades took place through the Wallumbilla GSH, they were largely for very small quantities. The four per cent of bilateral trades accounted for around 70 per cent of the total quantity of gas traded. On average, a trade through the Wallumbilla GSH was for a quantity of 8 TJ, compared to the average quantity across bilateral trades of 532 TJ.

Chart 4.6 shows the average prices for bilateral trades in Queensland and for trades executed on the Wallumbilla GSH for each day in 2018.

**Chart 4.6: Average daily prices for bilateral trades in Queensland and trades on the Wallumbilla GSH, 2018**



Source: ACCC analysis of information provided by gas suppliers, AER, AEMO.

Chart 4.6 shows that average daily prices on the Wallumbilla GSH varied between \$6.38/GJ and \$12.17/GJ between 1 January 2018 and 31 December 2018, while average daily prices for bilateral trades fluctuated between \$7.00/GJ and \$12.55/GJ over the same period. Average prices for bilateral trades appear to be more variable than prices for trades on the Wallumbilla GSH in 2018. This is likely to reflect the higher variability of quantities involved in bilateral trades, and the additional flexibility available within GSAs made bilaterally.

Chart 4.6 shows that average prices for bilateral trades generally tracked average prices for trades at the Wallumbilla GSH, albeit with a number of short periods where average prices diverged—these do not, however, appear to follow any consistent pattern. Prices can fluctuate for a number of reasons, including differential responses to external events such as fluctuations in LNG netback prices, Brent crude oil price, gas production or prices in the National Electricity Market (NEM) where demand for GPG can be intermittent.

A number of bilateral short-term GSAs obtained by the ACCC had price mechanisms linked to either the Brent crude oil price or the JKM. Estimated prices for these short-term GSAs are likely to be sensitive to the assumptions made and may have contributed to disparity between bilateral and Wallumbilla GSH average prices.

Some of the variation in the averages of prices paid under bilateral and Wallumbilla GSH trades may also be attributable to:

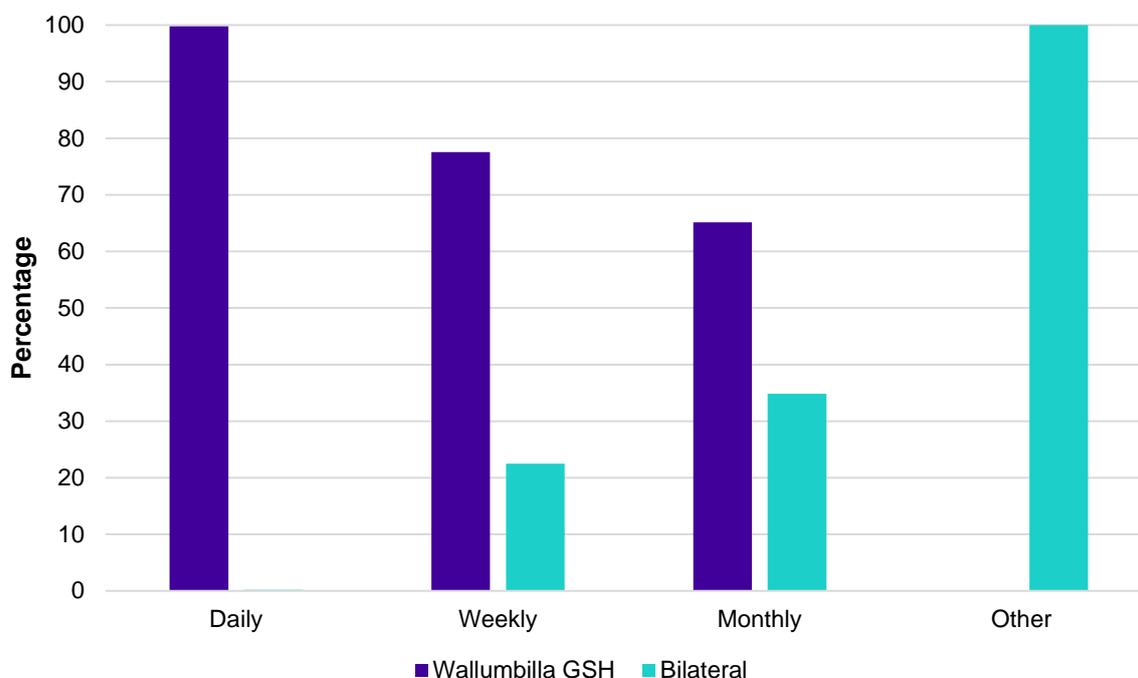
- the inclusion of non-price terms and conditions (for example, a take or pay multiplier less than 100 per cent and/or a load factor greater than 100 per cent) in bilateral trades that are not available in the standardised products available on the Wallumbilla GSH
- the longer contract terms that are available under bilateral trades than the standardised products available on the Wallumbilla GSH.

Terms and conditions such as these can be used by parties to hedge against future uncertainty, and consequently their inclusion may result in parties being willing to pay higher prices under bilateral trades than what they would for a standardised product on the Wallumbilla GSH.

For example, GPGs that have more variable supply requirements may need to negotiate a lower take or pay multiplier or higher load factor than is available in the standardised product available on the Wallumbilla GSH and so will seek to enter into a bilateral trade instead. Of the short-term GSAs that were considered as part of this analysis, 55 per cent have a take or pay multiplier of 100 per cent, 16 per cent have a take or pay multiplier of 0 and the remainder fall in between. In comparison, trades entered into on the Wallumbilla GSH have an implied take-or-pay of 100 per cent.

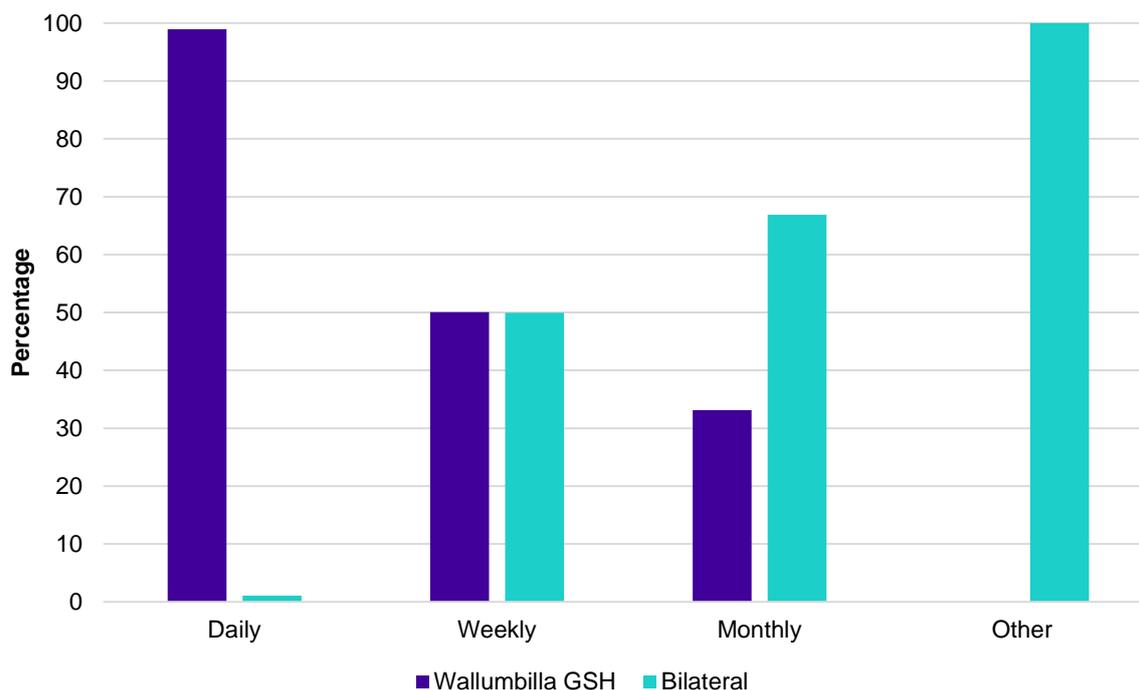
Charts 4.7 and 4.8 show the percentage of trades and the percentage of quantities traded by product bilaterally and on the Wallumbilla GSH in 2018. As noted above, five products are available via the Wallumbilla GSH. In the analysis that follows the Balance-of-Day, Day-Ahead and Daily products have been aggregated into a single Daily product category, and bilateral short-term GSAs for a term of greater than a month and less than a year are aggregated and referred to as 'Other'.

**Chart 4.7: Percentage of trades by product, 2018**



Source: ACCC analysis of information provided by gas suppliers, AER, AEMO.

**Chart 4.8: Percentage of total quantities by product, 2018**



Source: ACCC analysis of information provided by gas suppliers, AER, AEMO.

Chart 4.7 shows that term lengths between trades made bilaterally and on the Wallumbilla GSH vary significantly. Trades on the Wallumbilla GSH account for a majority of Daily, Weekly and Monthly trades, at just under 100 per cent, 78 per cent and 65 per cent, respectively, whereas bilateral trades account for 100 per cent of Other trades.

Chart 4.8 also illustrates the significant differences in quantities traded on the Wallumbilla GSH compared to through bilateral trades. For instance, despite accounting for approximately 22 per cent of Weekly trades, bilateral trades account for just under 50 per cent of the total quantity of Weekly trades. Similarly, despite trades on the Wallumbilla GSH constituting 65 per cent of Monthly trades, bilateral trades accounted for around 67 per cent of total Monthly quantities.

Notable differences between the length and size of contracts may arise for a number of reasons, including participants' perceptions of liquidity on the Wallumbilla GSH, or the ability to negotiate a contract length that may be costly to achieve or not available on the Wallumbilla GSH. For example, a party looking for a six months gas supply contract could either enter into six consecutive trades of a single calendar month on the Wallumbilla GSH, or negotiate a single six month trade bilaterally. Because trades on the Wallumbilla GSH can occur a maximum of three months in advance, the latter three months could not be contracted at the time of the initial month trade, which may expose the party to future risks.

Conversely, trading bilaterally may be unattractive or costly for participants who need to sell or buy small quantities in a short amount of time and lack a previously negotiated master sales agreement. For these participants, the standardised nature of trading on the Wallumbilla GSH and the handling of associated contractual costs by AEMO may make trading on the Wallumbilla GSH a more attractive option than trading bilaterally.

The decision of whether to trade using the Wallumbilla GSH or bilaterally may also reflect differences in each participants' operational needs and capabilities. This is reflected in the

fact that some suppliers use the Wallumbilla GSH to conduct all of their short-term trades, whereas some suppliers conduct all their trading bilaterally. This may be further reflected in take-or-pay values, where buyers, such as GPGs, may have more variable supply needs and so may negotiate lower take-or-pay percentages with suppliers.

While there are reasons why some market participants may prefer to sell gas on a short-term basis bilaterally, rather than via the Wallumbilla GSH, it may still be possible to generate more liquidity at the Wallumbilla GSH. Greater liquidity would increase transparency of gas prices, thereby improving the efficiency of gas trading in the market.

Therefore, consideration should be given to offering longer dated products and incorporating some degree of supply flexibility in the standardised Wallumbilla GSH products, for example, by adopting a take or pay percentage below 100 per cent and a load factor greater than 100 per cent.

### 4.3. Prices received by Queensland exporters for LNG spot sales in 2017–18

This section presents data on LNG spot sales made by Queensland LNG producers over the period 2017-18. We compare prices received for those spot sales to contemporaneous daily price assessments of LNG spot prices (based on Platts' JKM).<sup>56</sup> This section also provides a high-level summary of the number of LNG spot sales made by the LNG producers in Queensland in each quarter of 2018. The approach for this analysis is set out in box 4.3.

#### **Box 4.3: Methodology for comparing spot sales to JKM at Gladstone**

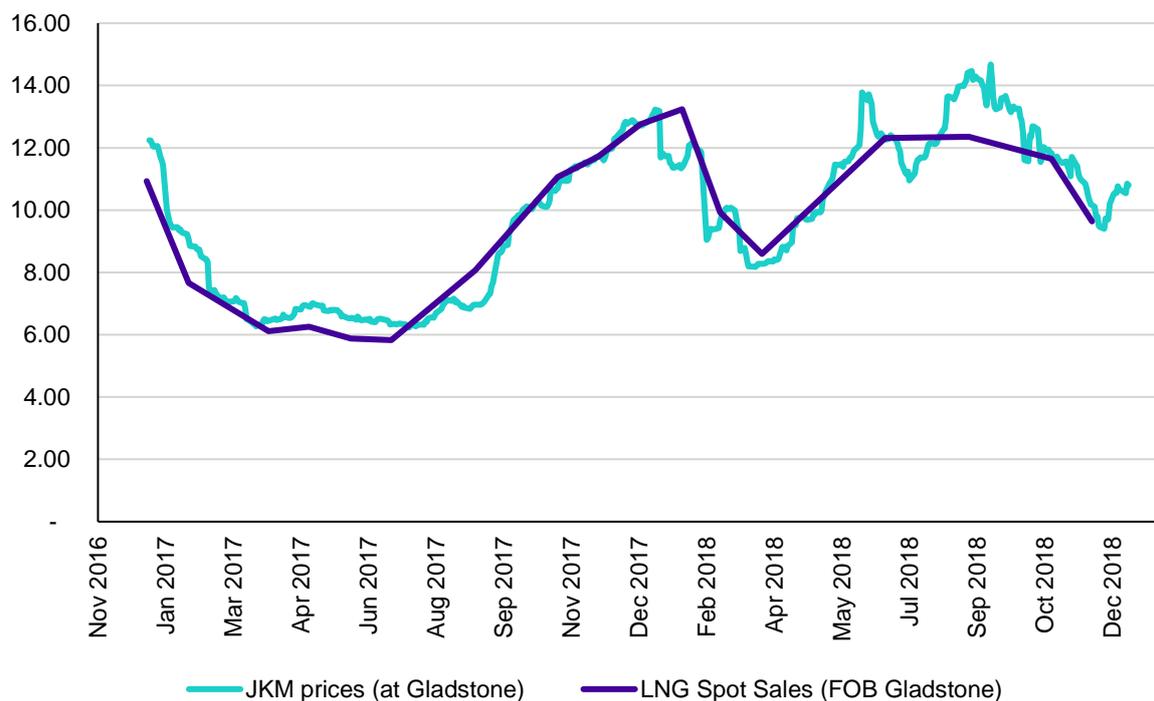
The analysis in this section was undertaken as follows:

- The ACCC acquired invoices and relevant information related to LNG spot sales, such as information on shipping costs, from LNG producers.
- The ACCC converted LNG spot sale prices from USD/MMBtu to AUD/MMBtu using the relevant daily US/AUD exchange rate and divided MMBtu by a conversion factor of 1.055 to convert to GJ.
- The ACCC adjusted prices for cargoes delivered to destination ports by subtracting shipping costs provided by LNG producers (for consistency, all LNG sales were assessed on a FOB basis at Gladstone).
- The ACCC converted daily assessed JKM prices, obtained from Platts, into AUD/GJ using the same approach as above and then netted it back to a FOB price in Queensland by subtracting estimates of shipping costs obtained from Platts.

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<sup>56</sup> Individual spot sale prices have not been published due to confidentiality considerations.

**Chart 4.9: LNG spot sale prices (FOB Gladstone) compared to JKM (netted back to Gladstone)**



Source: Platts, ACCC analysis of information provided by LNG producers.

Note: The chart above includes LNG spot sales from APLNG and GLNG, but not QGC (as this pricing data is not available).

Chart 4.9 shows that over the period 2017–18, the prices received by Queensland LNG producers for LNG spot sales were broadly in line with the JKM. This is to be expected as the Queensland LNG producers supply into a relatively deep global LNG market and are effectively price takers in that market.

Periods where there is a slight divergence between the two curves reflects differences between the way in which spot sales are made and the way in which JKM is assessed. As the JKM is a ‘measure’ of prices expected by market participants averaged over a one-month cargo delivery period, rather than an index of prices at which actual sales are made, there may be times where prices achieved for individual LNG spot sales differ to the JKM measure at that time. Actual spot sales agreed to a point in time might have a delivery date that does not coincide with the delivery period for which the JKM is assessed.

Table 4.2 presents data on the number of LNG cargoes (equivalent to approximately 3.2–3.5 PJ of LNG) sold by Queensland LNG producers into the LNG spot market in each quarter of 2017 and 2018.

**Table 4.2: LNG cargoes by quarter, 2018<sup>57</sup>**

Quarter	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018
Number of LNG spot sales	6	8	5	4	4	1	3	4

Source: ACCC analysis of information provided by LNG producers.

Asian LNG prices have traditionally exhibited a seasonal pattern, with elevated prices during the Asian winter—which reflects the use of natural gas for heating—and lower prices during the Asian summer. For this reason, LNG producers might be expected to sell more cargoes during the Australian summer. However, as shown in table 4.2, these sales do not exhibit a clear seasonal pattern. This suggests that the timing of LNG spot sales is driven by a range of factors, not just the seasonal prices in global markets.

Notably, there was almost a 50 per cent fall in LNG spot sales over the two years, from 23 in 2017 to 12 in 2018, which might reflect the commitments made by LNG producers under the Heads of Agreement between the LNG producers and the Australian Government. This equates to about 36 PJ less LNG exported in 2018 as compared to 2017.

The quantity of gas exported in 2018 equates to about 40 PJ, somewhat above the 34 PJ that the LNG producers expected to export at the end of 2017.<sup>58</sup>

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<sup>57</sup> This includes some sales made by LNG producers to their existing long-term buyers that were in addition to the quantities that LNG producers were required to supply to those buyers under the long-term export contracts. The ACCC included these sales in the table because they were 'discretionary' sales, but the ACCC does not know whether all of these cargoes were actually sold on the LNG spot markets.

<sup>58</sup> ACCC, Gas Inquiry 2017-2020 Interim Report, December 2017.

## 5. Prices paid in short-term trading markets in the past 12 months

Chart 5.1 shows the daily prices paid for gas in the short-term trading markets (STTM) in the Southern States (the simple average of the Victorian DWGM, the Sydney STTM and the Adelaide STTM) and Queensland (the simple average of the Wallumbilla GSH and the Brisbane STTM) from March 2018 to early March 2019. The chart also shows the absolute price difference between the markets in Queensland and the Southern States.

**Chart 5.1: Daily prices paid in domestic short-term trading markets, March 2018 to March 2019**

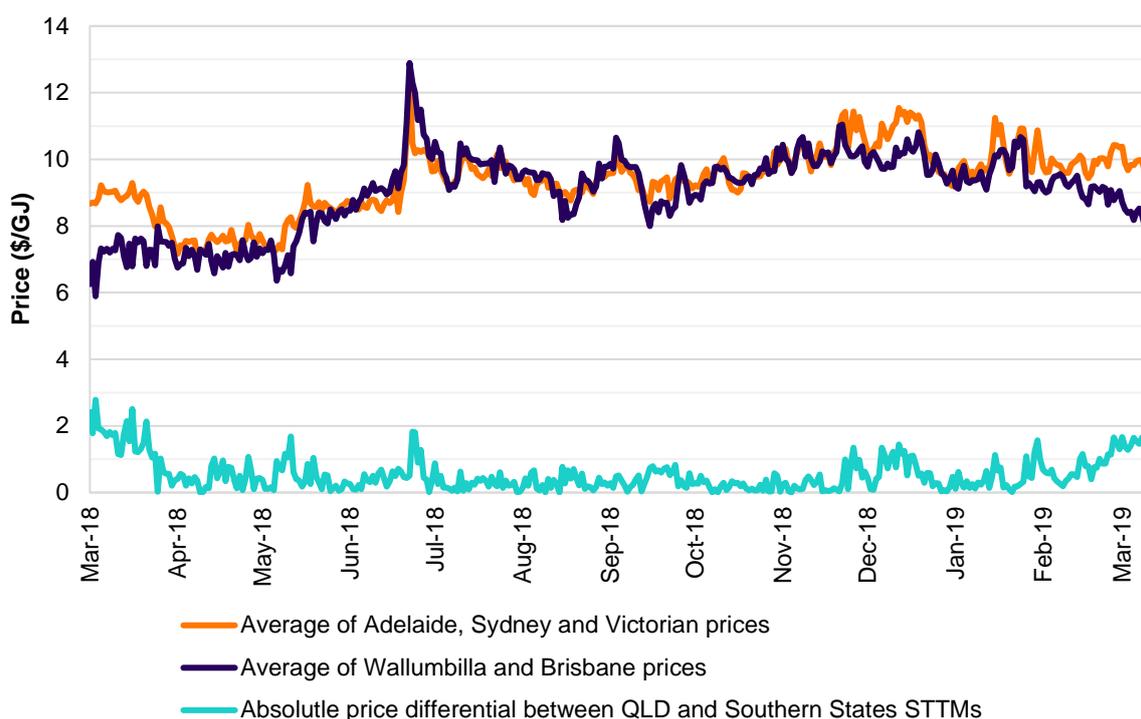


Chart 5.1 shows that since the December 2018 report, prices paid in short-term trading markets in Queensland and the Southern States have fluctuated within \$8/GJ-\$12/GJ range.

Prices paid in northern and southern markets tracked each other closely over most of 2018 and early 2019, although they diverged in early February 2019. Between July and late November 2018, the absolute price difference between Queensland and the Southern States STTMs remained below \$1/GJ, with this difference increasing to about \$2/GJ by March 2019. By mid-March, the simple average of the prices in short-term trading markets in the Southern States was about \$10.30/GJ compared to \$9.30/GJ in Queensland.

Recent prices in domestic short-term trading markets in the Southern States are higher relative to the same period in the previous year. The simple average of prices in the Southern State STTMs was \$9.99/GJ for the first quarter of 2019 compared to \$8.96/GJ for the first quarter of 2018 (an 11.4 per cent increase).

In Queensland, the price changes have been greater than those in the Southern States. The simple average of prices in Queensland STTMs was \$9.26/GJ for the first quarter of 2019 compared to \$7.65/GJ for the first quarter of 2018 (a 20.95 per cent increase).

The quantity of gas traded in short-term trading markets in the Southern States has decreased since the end of 2018. In aggregate 24.84 PJ of gas was traded in Adelaide, Sydney and Victoria in the final quarter of 2018 and 21.05 PJ of gas were traded in the first quarter of 2019.

In Queensland, the quantity of gas traded on the Brisbane STTM fell to 5.29 PJ in Q4 2018, from 6.9 PJ in Q3 2018, but was materially higher in Q1 2019 at 9.44 PJ.

Changes in quantities traded across recent quarters could relate to seasonal variations in energy demand (such as gas required for GPG due to hot weather), as well as changes in demand for gas to be used for LNG production (particularly since LNG prices have been lower than the long-term average in early 2019).

## Appendix A

This appendix presents data tables for several charts in this report — charts 4.1, 4.2 and 4.3.

These tables present data on invoiced prices paid by gas users to retailers, and all gas buyers to producers.

**Table A.1: Average of gas commodity prices invoiced by producers (\$nominal/GJ)**

Basin	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018
East Coast Gas Market	\$4.18	\$4.27	\$4.01	\$4.35	\$4.47	\$4.50	\$4.46	\$4.93	\$5.02	\$5.10	\$5.25	\$6.21	\$6.39	\$6.60	\$6.77
Bowen/Surat	\$3.16	\$3.44	\$3.12	\$3.58	\$3.70	\$3.74	\$3.99	\$3.68	\$4.25	\$4.61	\$4.52	\$4.48	\$4.45	\$4.72	\$4.69
Cooper	\$5.48	\$6.07	\$5.57	\$5.75	\$5.89	\$5.72	\$5.84	\$6.06	\$6.29	\$6.28	\$6.19	\$6.74	\$6.94	\$6.81	\$6.92
Gippsland/Bass/Otway	\$4.49	\$4.50	\$4.53	\$4.66	\$4.67	\$4.71	\$4.51	\$5.33	\$5.18	\$5.14	\$5.43	\$6.99	\$7.12	\$7.39	\$7.67
Recent GSAs												\$8.69	\$8.52	\$8.77	\$8.69

Note: The data in this table corresponds to chart 4.1 on page 39.

**Table A.2: Average of gas commodity prices invoiced by retailers to C&I Gas users (\$nominal/GJ)**

Basin	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018
East Coast Gas Market	\$6.87	\$6.64	\$6.63	\$6.72	\$6.67	\$6.63	\$6.61	\$7.44	\$7.40	\$7.56	\$7.58	\$9.00	\$9.02	\$9.12	\$9.29
Recent GSAs												\$10.19	\$10.23	\$10.24	\$10.59

Note: The data in this table corresponds to chart 4.2 on page 40.

**Table A.3: Average of gas commodity prices invoiced by retailers to C&I gas users, by region (\$nominal/GJ)**

Basin	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018
Queensland	\$9.54	\$9.48	\$9.56	\$9.75	\$9.75	\$9.75	\$9.74	\$8.77	\$9.01	\$9.54	\$9.65	\$9.67	\$9.77	\$9.98	\$10.12
Southern States	\$5.06	\$5.45	\$5.43	\$5.60	\$5.64	\$5.61	\$5.46	\$7.11	\$6.89	\$6.98	\$6.83	\$8.79	\$8.77	\$8.87	\$8.96

Note: The data in this table corresponds to chart 4.3 on page 41.