ACCC review of the LNG netback price series

Issues paper

18 March 2021

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Acronym List

C&I	commercial and industrial
DFDE	dual-fuel diesel electric
FOB	free on board
FID	final investment decision
GSA	gas supply agreement
JKM	Japan Korea Marker
LNG	liquefied natural gas
NBP	National Balancing Point
TTF	Title Transfer Facility
Organisations	
ACCC	Australian Competition and Consumer Commission
AEMO	Australian Energy Market Operator
ICE	Intercontinental Exchange
Platts	S&P Global Platts
RBA	Reserve Bank of Australia
Units	
MMBtu	Million British Thermal Units–see below, Units of Energy
mtpa	million tonnes per annum
GJ	Gigajoule
PJ	Petajoule
TCF	trillion cubic feet

Glossary

ACCC's East Coast Gas Inquiry 2015: The ACCC's inquiry into the east coast gas market in 2015, as reported on in April 2016.

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

Final investment decision: The point at which a project is approved for execution.

Free on board (FOB) price: The price of gas delivered by ship to a destination port. LNG prices can be specified on a FOB basis.

Gas supply agreement: A contract between the buyer and seller for the supply of gas.

Henry Hub: Is a major gas hub for spot and futures trading in the United States and acts as the notional point of delivery for gas futures contracts. Henry Hub is based on the physical interconnection of nine interstate and four intrastate pipelines in Louisiana.

Japan Korea Marker: Is an international benchmark price for LNG spot cargos. It reflects the spot market value of cargoes delivered ex-ship (DES) into Japan, South Korea, China and Taiwan.[1]

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: An LNG netback price is a measure of an export parity price for gas. It represents the effective price an LNG producer would expect to receive for gas, at a specific reference location, if that gas were converted to LNG and exported. This is done by taking the price payable for LNG and subtracting or 'netting back' costs incurred between the reference location and the location where the LNG is delivered.

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

LNG producer: LNG producers process and prepare natural gas, using liquefaction, into LNG for transmission and sale to overseas markets.

Million British Thermal Units (MMBTU): One Thousand Thousand British Thermal Units.

National Balancing Point (NBP): Is a major virtual market place for gas located in the United Kingdom that allows market participants to transfer gas to other participants.

Title Transfer Facility (TTF): Is a major virtual market place for gas located in the Netherlands that allows market participants to transfer gas to other participants.[2]

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1 U.S Department of Energy, *Global LNG Fundamentals*, 2017, https://www.energy.gov/sites/prod/files/2017/10/f37/Global%20LNG%20Fundamentals_0.pdf, viewed 15 March 2021.

2 Gasunie Transport Services, *TTF*, n.d., https://www.gasunietransportservices.nl/en/shippers/products-and-services/ttf, viewed 15 March 2021.

Overview

The Australian Competition and Consumer Commission (ACCC) is undertaking a review of the LNG netback price series, which is published regularly on the ACCC website, as part of the ongoing inquiry into the east coast gas market.

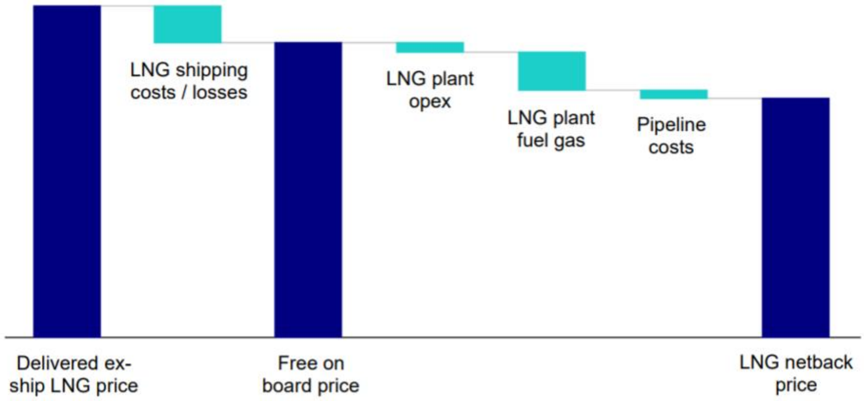
The ACCC began publishing the LNG netback price series in 2018 as a measure to improve transparency of gas prices in the east coast gas market.

The LNG netback price represents the price, at Wallumbilla, that a gas supplier would expect to receive for gas if it was converted to LNG and exported. This is done by taking the price payable for LNG and subtracting or 'netting back' costs incurred between Wallumbilla and the location where the LNG would be delivered.

Our current approach to the LNG netback price series

The prices published by the ACCC in the LNG netback price series are short-run LNG netback prices based on measures of Asian LNG spot prices. Figure 1 provides a stylised example.

Figure 1. Stylised LNG netback price calculation



Source: ACCC Guide to the LNG netback price series

The ACCC's current approach to calculating LNG netback prices is to start with an LNG price or reference price (using Asian LNG spot prices) and to subtract LNG freight costs (from Gladstone to Tokyo). The price is then converted to $AUD/GJ using contemporary exchange rate data and a GJ to MMBtu conversion ratio of 1:1.055. The ACCC then subtracts LNG liquefaction costs — LNG plant (marginal) costs and LNG plant fuel gas — and adjusts for pipeline transportation costs between Wallumbilla and Gladstone.

The ACCC currently publishes a monthly historical LNG netback price series and a fortnightly forward LNG netback price series for a forward period of two years.

Issues the ACCC is seeking information on:

The ACCC welcomes your feedback on the ACCC's LNG netback price series, including any of the following issues.

The length of the forward LNG netback price series

1. Whether there would be merit in the ACCC publishing a longer-term LNG netback price series.
2. The most appropriate period, or periods, over which to publish forward LNG netback prices, based on market trends in LNG markets and the east coast gas market.
3. Whether the ACCC should publish multiple forward LNG netback prices, based on different periods (to inform pricing for different GSA terms).
4. How important it is that the length of the forward LNG netback price series is consistent with the duration of domestic GSAs.
5. Whether there are relevant market benchmarks for a longer forward LNG netback price series, or methods/approaches to deriving such market benchmarks.
6. Issues that should be considered in calculating a longer-term LNG netback price series.

LNG price

7. The influence of international gas markets on pricing in the east coast gas market.
8. The relevance of different international LNG and gas price markers for LNG pricing in key LNG export markets and the east coast gas market.
9. Whether the relevance of different LNG and gas price markers is different for short-term versus long-term LNG netback prices.
10. Whether the relevance of different LNG and gas price markers, for the LNG netback price series, is likely to change over time.
11. Whether the ACCC should consider additional methodological approaches, such as averaging, to account for the impact of price volatility of price markers on calculated LNG netback prices.
12. Any other issues that should be considered when determining which LNG and gas reference price should be used for the ACCC LNG netback price series.

LNG freight costs

13. Available data sources for longer-term LNG freight rates (beyond a period of two years), and whether the appropriate data source would be different if different international LNG and gas price markers were used to calculate LNG netback prices.
14. Whether northeast Asia should be considered the appropriate delivery location for the purposes of estimating LNG freight costs for LNG exported from Gladstone.
15. Any other issues that should be considered when sourcing longer-term LNG freight rates.

Conversion to $AUD/GJ

16. Whether the ACCC's current approach to converting FOB LNG prices to $AUD/GJ is appropriate.
17. Alternative approaches that should be considered by the ACCC.
18. Any other issues that should be considered when converting FOB LNG prices to $AUD/GJ.

LNG plant costs

19. Whether the ACCC's current approach to deducting LNG plant and liquefaction costs is appropriate.

20. How LNG plant and liquefaction costs should be accounted for when calculating the LNG netback price series.
21. Whether different approaches to LNG plant costs should be used for different reference price markers.
22. Whether different approaches to LNG plant costs should be used for short-term and longer-term LNG netback prices.
23. Any other issues that should be considered when accounting for LNG plant and liquefaction costs.

Pipeline transportation costs

24. Whether the ACCC’s current approach to deducting pipeline transportation costs is appropriate.
25. How pipeline transportation costs should be accounted for when calculating the LNG netback price series.
26. Whether different approaches to pipeline costs should be used for short-term versus longer-term LNG netback prices.
27. Any other issues that should be considered when accounting for pipeline transportation costs.

1. Introduction

The Australian Competition and Consumer Commission (ACCC) is undertaking a review of the LNG netback price series, which we publish regularly on the ACCC website, as part of the ongoing inquiry into the east coast gas market (the Inquiry).[3]

The Australian Government directed the ACCC to undertaken the Inquiry, which began in April 2017 and will run until the end of 2025, due to concerns about the possibility of a substantial domestic gas supply shortfall in 2018, as well as high wholesale gas commodity prices. It follows the ACCC's previous inquiry into the east coast gas market, which the ACCC conducted from 2015 to 2016.

Over the course of the Inquiry, the ACCC has reported a wide range of information about the gas market, such as the supply-demand outlook, prices offered for supply in the domestic market and the experiences of Commercial and Industrial (C&I) gas users.

As outlined in the ACCC's January 2021 interim report, the ACCC is undertaking a review of the LNG netback price series.

The ACCC introduced the LNG netback price series to improve transparency of gas prices in the east coast gas market.

It reflects the price that a gas supplier would expect to receive from a domestic buyer to be indifferent between supplying gas to the domestic market or to LNG export markets (all other things equal). This is because it is a measure of the value foregone, or opportunity cost, of supplying gas to the domestic market compared to the alternative of exporting it as LNG.[4] Box 1 provides a high-level overview of LNG netback prices, with further detail on the ACCC's LNG netback price series provided in section 2 of this issues paper.

Box 1 – What is an LNG netback price?

An LNG netback price is a measure of an export parity price for gas. It represents the effective price an LNG producer would expect to receive for gas, at a specific reference location, if that gas were converted to LNG and exported. This is done by taking the price payable for LNG and subtracting or 'netting back' costs incurred between the reference location and the location where the LNG is delivered.

For example, the ACCC LNG netback price series is a measure of the effective price that would be expected to be received for gas, at Wallumbilla, if that gas was exported as LNG to northeast Asia. This is done by taking the Japan Korea Marker (JKM), an assessment of the delivered northeast Asian LNG price, and subtracting the cost of transporting gas to the liquefaction facility, the cost of liquefaction and indicative costs of shipping LNG from Gladstone to Tokyo (as a proxy for delivery costs into northeast Asia).

Why we publish an LNG netback price

The ACCC began publishing the LNG netback price series in 2018 to provide information to the market (including gas users) on the opportunity costs to gas suppliers of supplying gas to the domestic market, rather than export markets.[5]

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3 ACCC, *Gas Inquiry 2017-2025 webpage*, March 2021, https://www.accc.gov.au/regulated-infrastructure/energy/gas-inquiry-2017-2025, viewed 15 March 2021.

4 ACCC, Gas Inquiry 2017–2020 interim report, April 2018.

5 For example, LNG producers have the option to produce and liquefy additional gas for export markets, rather than supply the domestic market. Alternatively, the LNG producers also have the option to purchase and export third-party gas from other gas suppliers, which means that LNG netback prices may also be relevant to other gas suppliers (beyond the LNG producers).

This improved transparency around gas pricing and reflected a number of issues in the east coast gas market identified by the ACCC over the course of the Inquiry.

First, market participants have incomplete information about domestic gas pricing, and specifically, about the opportunity costs to LNG producers of supplying the domestic market.

This reflects that the majority of domestic gas production is traded through confidential, bilateral Gas Supply Agreements (GSAs), with prices agreed to under these GSAs not made publicly available. Furthermore, at the time we began publishing the LNG netback price series, there was limited understanding, among a range of market participants, about how LNG spot prices could potentially influence domestic prices.

While the east coast gas market has a number of short-term trading markets and gas supply hubs that publish information on gas prices, these are relatively thinly traded and prices in these markets are not necessarily representative of gas commodity pricing for longer-term GSAs.

Second, the ACCC identified significant information asymmetry between gas suppliers and users with respect to gas pricing.[6] In comparison to gas users, gas suppliers are likely to receive significantly more information on gas pricing, as part of the numerous negotiations they are party to. In contrast, gas users may negotiate for gas supply with limited suppliers and only when they are seeking to renew their supply arrangements.

Section 2 of this issues paper provides further detail on the ACCC's LNG netback price series.

Why is the ACCC reviewing the LNG netback price series?

In 2020, the Australian Government requested that the ACCC undertake a review the LNG netback price series by the end of September 2021. The request was made as part of a broader range of government announced measures that seek to increase gas supply, increase efficiencies in gas transportation, and improve the negotiating power of gas consumers in the east coast gas market.[7]

The ACCC developed the LNG netback price series in early 2018, and has published LNG netback price updates regularly on the ACCC's website since September 2018. When we commenced publishing the LNG netback price series, we indicated that we would monitor the usefulness of the LNG netback price series over the course of the inquiry, and make any necessary refinements.

We consider that it is appropriate to undertake a public review of the LNG netback price series now, in part reflecting significant changes in LNG markets due to growing supply, increased trade in LNG spot markets and findings from the ACCC's review of pricing strategy documents obtained from east coast gas suppliers.

Global LNG markets have experienced significant changes since we started publishing the LNG netback price series. As discussed in section 3, global liquefaction capacity has increased significantly (particularly in the United States), with additional growth in the United States, Qatar and Russia expected to contribute to a doubling of global LNG liquefaction capacity over the next 20 years. While growth in LNG demand slowed in 2020 due to the COVID-19 pandemic, it is also forecast to grow over the coming decades.

Furthermore, trade in LNG spot markets has increased in recent years. These changes have implications for LNG market supply and pricing dynamics, which may in turn have

6 ACCC, Report, *Inquiry into the East Coast Gas Market*, April 2016, pp. 88–89.

7 Prime Minister of Australia, Media Release, *Gas-fired Recovery*, 15 September 2020.

implications for the prices at which domestic gas suppliers are willing to supply gas to the domestic market.

The Inquiry's January 2021 interim report presented preliminary findings from a review of pricing strategy documents provided by key gas suppliers in the east coast gas market. The report found that while LNG netback prices based on North Asian LNG spot markets remained a key factor influencing domestic prices, some suppliers also considered other factors when offering gas to the domestic market. For example, some of the LNG producers considered oil-linked short to medium-term LNG contracts (so-called LNG strips) as an alternative to supplying the domestic market. These findings suggest that LNG spot prices are not the only international reference price considered by LNG producers, and adds further weight to the ACCC's decision to review the LNG netback price series.

Finally, the Australian Government recently announced that it had signed a new Heads of Agreement with the east coast LNG producers. Under this Heads of Agreement, the LNG producers have committed to offer uncontracted gas to the domestic market first on internationally competitive terms. Moreover, the Heads of Agreement notes that LNG netback prices, based on Asian LNG spot prices, play a role in influencing domestic gas prices, with the ACCC's LNG netback price series explicitly referenced in the Heads of Agreement.[8]

In light of these developments, we consider it timely to review the netback price series.

Scope of the review

This review will consider a range of matters related to calculating the LNG netback price series, including:

- The most appropriate time period, or periods, over which to publish forward LNG netback prices. The ACCC currently publishes forward LNG netback prices over a two-year period.
- The choice of the LNG price used as a reference to calculate the LNG netback price series. The review will consider the merits of different LNG and gas price markers, based on their relevance to the east coast gas market.
- How LNG plant cost and pipeline transportation costs are considered in calculating the LNG netback price series.

The ACCC notes that there are a number of proposed LNG import terminals for the east coast of Australia. However, we will consider the development of an import parity price separate to this review, once it becomes clearer if an import terminal will commence operation on the east coast and the arrangements that will apply to its commercial operations.

Review timeline

The dates below are indicative. The ACCC will publish further information with confirmed dates on its website as the Inquiry progresses.

12 April 2021	**Submissions on issues paper due**
April 2021	First round of stakeholder consultation

[8] Department of Industry, Science, Energy and Resources (DISER), Heads of Agreement, *The Australian East Coast Domestic Gas Supply Commitment*, 21 January 2021.

Late June 2021	Publication of draft position paper
Mid-July 2021	Submissions on draft position paper due
July 2021	Second round of stakeholder consultation
30 September 2021	Publication of final position paper

How to participate

Stakeholders are invited to participate in the review of the LNG netback price series.

There will be a number of ways and opportunities for interested parties to provide information to the ACCC as part of the review.

Interested parties may provide written submissions to the ACCC in response to:

- this issues paper (feedback on the issues paper is requested by **12 April 2021**)
- a draft position paper, which will be published in late June.

Interested parties can also request a meeting with the ACCC to discuss issues raised in their submissions.

Make a written submission to this issues paper

This issues paper invites feedback on a number of issues as outlined in section 4. The issues raised are a guide. They are not exhaustive and you do not need to comment on all issues.

In making a submission

- We request that you provide your submission in electronic form, either in PDF or Microsoft Word format, which allows the submission to be text searched.
- We request that you provide examples, evidence, and data (with sources) where available.

Submissions to this issues paper are requested by **12 April 2021**. Submissions should be emailed to LNGnetbackreview@accc.gov.au.

ACCC contacts

To make a submission or request a meeting, please email the ACCC at LNGnetbackreview@accc.gov.au.

If you would like to ask a question about the review, please contact:

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Treatment of information

The review is a public process and written submissions will generally be made available on the ACCC website.

The *Competition and Consumer Act 2010* allows parties that provide written submissions to the Inquiry to make claims for confidentiality in certain circumstances.

The ACCC can accept a claim of confidentiality from a party if the disclosure of information would damage their competitive position. If the ACCC is satisfied that the confidentiality claim is justified, it must keep that information confidential unless it considers that disclosure of the information is necessary in the public interest.

If the ACCC considers that the confidentiality claim cannot be upheld, the ACCC will provide the party with an opportunity to withdraw part or all of their submission. If this information is withdrawn then the ACCC will not take it into account. If a party elects not to withdraw the information then the ACCC may disclose the information publicly. If the ACCC subsequently considers that disclosure of the information that has initially been treated as confidential may be necessary in the public interest, the ACCC will consult with the party providing the information before any such disclosure is made.

The ACCC invites you, where appropriate, to discuss confidentiality issues further with the ACCC in advance of providing a written submission or other information.

Any information that you would like to claim confidentiality over should be provided in a separate document and should be clearly marked as “confidential” on every page. Reasons must be provided in support of the claim for confidentiality, so that the ACCC can properly consider whether the claim is justified.

2. ACCC LNG netback price series

The ACCC's 2015 East Coast Gas Inquiry made a number of recommendations to improve the operation of the east coast gas market, including that an LNG netback price series be developed and regularly published. When the current ACCC inquiry commenced, the ACCC sought feedback on whether it should publish an LNG netback price.

2.1. Initial development of the ACCC's LNG netback price series

In early 2018, the ACCC undertook a targeted consultation with a range of industry stakeholders on issues raised in our December 2017 interim report, including whether the ACCC should publish an LNG netback price.

We also sought feedback on our proposed approach for calculating an LNG netback price, including whether it was appropriate to base it on LNG prices in Asian LNG spot markets, and whether it was appropriate that only variable costs be taken into account.

In total, the ACCC received 27 written submissions, all of which were confidential, from a range of stakeholders, including LNG producers, gas producers and retailers, gas users and user representatives, industry analysts and government departments. We also held subsequent discussions with these industry stakeholders.

The majority of stakeholders supported the ACCC publishing an LNG netback price series. This was particularly the case among gas users, with all users and user representatives supportive of publication of an LNG netback price series. While some gas suppliers were not supportive, most gas suppliers either supported publication or acknowledged that there 'would be merit' in publishing an LNG netback price series as a transparency measure.

However, views differed on the appropriateness of basing the LNG netback price series on prices in Asian LNG spot markets.

In our April 2018 interim report, we outlined our intended approach to publishing:

- a monthly historical LNG netback price series based on using a monthly average of the daily prices published by a commodity price reporting agency, netted back to Wallumbilla using estimates of the cost of shipping, liquefaction and transportation
- a forward LNG netback price series based on expected Asian LNG spot prices (at the time of publication), with forward prices to be published to the end of the following calendar year.

Along with publishing the LNG netback price series on the ACCC website, we have published pipeline tariffs to enable gas buyers to determine an indicative cost of transportation from Wallumbilla to other locations in the east coast gas market.[9] We have also published estimates of gas production costs in the east coast gas market.

2.2. The ACCC's current approach to calculating LNG netback prices

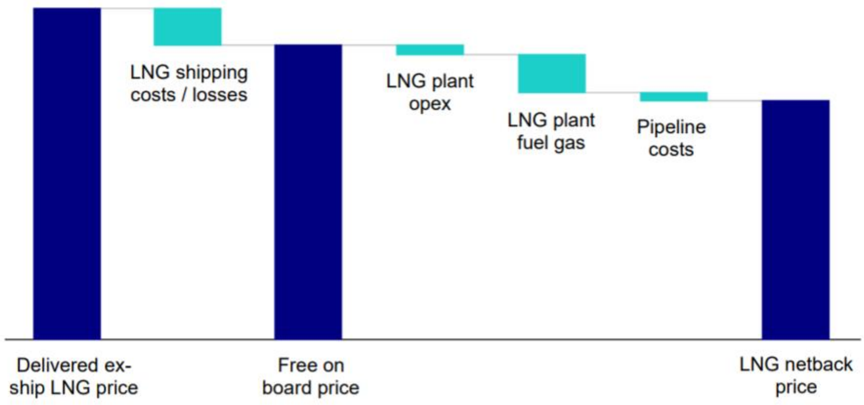
The prices published by the ACCC in the LNG netback price series are short-run LNG netback prices based on measures of Asian LNG spot prices.

As noted earlier, an LNG netback price reflects the price that an LNG producer could expect to receive for exporting LNG, netting back relevant costs associated with producing and

[9] Published pipeline tariffs reflect the prices actually paid by shippers under firm gas transportation agreements with pipeline operators, and are not necessarily reflective of an 'appropriate' or economically efficient price for gas transportation.

delivering LNG to a destination port. An LNG netback price can be calculated by subtracting relevant costs from an LNG reference price (see figure 2 for a stylised example).

Figure 2: Stylised LNG netback price calculation



Source: ACCC Guide to the LNG netback price series

At a high level, the ACCC's current approach to calculating LNG netback prices can be described as follows:

1. Start with an LNG price or reference price — the ACCC uses Asian LNG spot prices as a reference LNG price
2. Subtract LNG freight costs — the ACCC uses freight costs for transport of LNG from Gladstone to Tokyo
3. Convert to A$/GJ — the ACCC uses contemporary exchange rate data and a GJ to MMBtu conversion ratio of 1:1.055
4. Subtract LNG plant (marginal) costs and LNG plant fuel gas
5. Adjust for pipeline transportation costs between Wallumbilla and Gladstone.

The ACCC's LNG netback price series is netted back to Wallumbilla because this is the pipeline interconnection point that links the LNG producers' gas production facilities to the Australian domestic market.

The following sections discuss the ACCC's current approach to calculating LNG netback prices in more detail.

2.2.1. LNG reference prices

The starting point for calculating an LNG netback price, at any given point in time, is a measure of the relevant LNG price. The ACCC has based the prices in the LNG netback price series on the Japan Korea Marker (JKM), which is a measure of Asian LNG spot prices.

In practice, there is a range of LNG prices that could be used as a starting point for calculating an LNG netback price, including LNG spot prices and prices under short, medium or long-term contracts. Given LNG contracts are often oil-linked, there may be times where an oil-linked LNG reference price is appropriate.

When the current LNG netback price series was developed, the ACCC expected that the LNG producers would, in aggregate, produce quantities of gas in excess of the quantities required to satisfy their long-term LNG contractual obligations, with this excess likely to be sold into the

Asian LNG spot market if it was not used for domestic supply.[10] This, in part, reflects the close proximity of the Queensland LNG producers to major Asian LNG importing nations — this proximity means that most LNG exported from Gladstone would be likely to be sold into Asia.[11]

As such, the ACCC currently uses Asian LNG spot prices as a reference price, for the LNG netback price series, for any 'excess LNG' exported by the Queensland LNG producers. In particular, the ACCC publishes an LNG netback price series using information derived from both historical Asian LNG spot prices, as well as market expectations of future Asian LNG spot prices.

- **Historical LNG netback prices** are based on the Japan Korea Marker (JKM) as assessed daily by S&P Global Platts ('Platts'). The JKM represents the price assessment for physical LNG spot cargoes delivered ex-ship into northeast Asia. Price information is obtained from market participants with priority given to bids, offers and settled transactions made through Platts's daily Market on Close process, and represents firm offers and bids for deliveries in a given month.[12]
- **Forward LNG netback prices** are based on JKM futures contracts that are quoted by the International Continental Exchange (ICE), as at the time of publication, as a measure of market expectations of future Asian LNG spot prices for a cargo of LNG, for delivery in a specified future month. These are cash-settled futures based on Platts's JKM price assessments for a given calendar month, and are traded in increments of 10,000 MMBtu. ICE JKM futures prices are settled and published daily, and are determined by ICE using contract volumes traded on each day, as well as using price data from several sources, including spot, forward and derivative markets for both physical and financial products. The forward LNG netback prices we publish for a given future month are based on the end-of-day JKM futures prices quoted by ICE in respect of the day before publication.

While the ACCC LNG netback price series is currently calculated using Asian LNG spot prices, we will seek views on and consider whether to adopt and/or publish LNG netback prices based on other LNG prices or price markers as part of this review (section 4).

2.2.2. Deducting avoidable costs

For a given measure of Asian LNG spot prices, the next step is to deduct:

- LNG freight costs from Gladstone to northeast Asia
- LNG plant costs
- Pipeline transportation costs between Wallumbilla and Gladstone.

The ACCC's current approach deducts estimates of the short-run marginal costs for each of these components — that is, the costs associated with producing and shipping LNG that would be avoided, or not incurred, by LNG producers if excess gas that would otherwise be exported as LNG were instead supplied to the domestic market.

This reflects the short-run nature of the ACCC's LNG netback price series — our current approach does not deduct any costs that are fixed over the short-term, nor any of the capital costs incurred by the LNG producers to build the LNG facilities, since costs that cannot be avoided in the short-run would not be expected to be taken into account when making short-run commercial decisions. That is, it would be expected that when an LNG exporter is deciding whether to sell excess gas to the domestic market or for export, it would do so on

[10] ACCC, Gas Inquiry 2017–20 interim report, April 2018.

[11] ACCC, Gas Inquiry 2017–20 interim report, December 2017.

[12] S&P Global Platts, *Frequently asked questions,* n.d., https://plattsmethodology.platts.com/faq, viewed 4 March 2021.

the basis of a comparison between the effective price that would be received for an LNG spot cargo and the domestic gas price.

LNG freight costs

LNG freight costs represent the costs of shipping an LNG cargo (in US$/MMBtu) from the loading port to the destination port. As shown in figure 2, a measure of LNG freight costs is required to determine the free on board (FOB) price at the Gladstone LNG facility.

We currently use two sources of data for LNG freight costs — one on historical LNG freight cost for calculating the historical LNG netback price series, and one on future LNG freight rates for calculating forward LNG netback prices.

- **Historical LNG freight costs**, provided by Platts, are daily assessments of LNG freight costs between Gladstone and Japan. These single daily values represent the implied cost of a voyage between Gladstone and Futtsu at Tokyo Bay, which Platts use as a reference delivery port for Japan/Korea. The daily freight cost estimates are based on a range of both static and variable inputs and assumptions. These inputs include:
    1. Port costs — these are the costs incurred at the loading and discharge ports. Platts provides a list of assumed port costs in their specifications guide for LNG assessments and netbacks.[13]
    2. Charter costs — this reflects the cost of chartering the LNG tanker for a round-trip voyage structure, and an assumed three-day loading/discharging period. A ballast rate assessment is also included to value the return leg of the voyage to account for any payment needed to position and re-position a ship.
    3. Boil-off costs — this reflects the estimated value of the volume of LNG that is lost during the voyage due to boil-off. Platts uses assumptions on the rates of boil-off for different legs of the voyage (such as when the tanker is in port and when it is en route) and the capacity of the LNG tanker (including its fillable volume) to estimate the quantity of LNG boil-off, which is then valued at the destination price (using the relevant JKM price assessment).
    4. Fuel costs — this reflects the estimated cost of LNG tanker fuel oil costs. Platts uses assumptions on the consumption rate of fuel oil in combination with Platts's daily Singapore bunker fuel price assessment (available to subscribers) to estimate the total fuel cost for the voyage.
- **Forward LNG freight costs**, provided by Argus Media under licence, are weekly assessments of LNG freight costs between Gladstone and Tokyo, for each month of a 24-month forward period. The forward freight rates comprise the same cost components incurred over a round-trip as historical freight costs, with slightly varied assumptions. These include:
    1. A standard-sized dual-fuel diesel electric (DFDE) vessel for the voyage
    2. Boil-off is burnt on the outward leg to power the vessel, while the return leg is powered using bunker fuel
    3. The bunker fuel cost is based on the Argus assessment of Singapore high-sulphur fuel oil swaps
    4. The charter cost is based on Argus's daily assessment of charter rates east of Suez, as well as its 24-month global forward curve informed by market participant indications and global LNG arbitrages.

13 S&P Global Platts, Specifications guide, *Liquefied natural gas assessments and netbacks*, April 2020, p. 19, https://www.spglobal.com/platts/plattscontent/_assets/_files/en/our-methodology/methodology-specifications/lngmethodology.pdf, viewed 15 March 2021.

Additionally, for the purpose of the ACCC's forward LNG netback price series, Argus's forward LNG freight costs for a given future month are subtracted from the ICE JKM futures quote for the corresponding month to give a forward FOB price at Gladstone.

LNG plant costs

The next step in the calculation of the LNG netback price, for a given measure of Gladstone FOB prices, is to deduct LNG plant costs to get an indicative price at the LNG plant inlet.

LNG plant costs represent an estimate of the short-run marginal costs to produce LNG – that is, the costs an LNG producer incurs to convert excess gas to LNG. This includes the value of the gas that is consumed as fuel during the liquefaction process, as well as LNG plant operating expenditure.

The costs that are deducted are limited to those that would be incurred by the LNG producer if it decided to export excess gas, rather than supplying that gas on the domestic market. Given the LNG plants have excess capacity, these costs do not include the capital costs of constructing the LNG plants, or the costs of enhancing their capacity.

We use information obtained periodically from the three Queensland LNG producers to estimate LNG plant costs. We make a number of assumptions based on the information available to arrive at a measure of LNG plant fuel and operating costs for use in the historical component of the LNG netback price series, and the measures used for the forward component of the series:

- **Historical component**:
    1. To estimate the short-run marginal LNG plant operating expenditure, we average the short-run marginal operating costs incurred by each LNG producer in the relevant 12-month period.
    2. To estimate the value of LNG plant fuel gas, we use regression analysis to measure the marginal LNG plant efficiency for each LNG producer over a given quarter. This is calculated by considering the amount of LNG that is produced for every additional unit of gas that is fed into the LNG plant. The average of the three Queensland LNG producer's LNG plant efficiency is used for the quarterly figures.
- **Forward component:**
    1. The same estimates of short-run marginal operating costs are used for the purpose of calculating the forward LNG netback price series, however these are adjusted for inflation. This method is based on the assumption that LNG plant operating costs do not materially change over the short term.
    2. To estimate the value of LNG plant fuel gas, we take a slightly different approach and use the same regression method to determine the average of each producer's LNG plant efficiency for the most recent 12-month period for which data is available (rather than by quarter).

Pipeline transportation costs

The next step in the calculation of LNG netback prices is to account for short-run marginal pipeline transportation costs from the wellhead (the point gas is injected into the pipeline) to the LNG plant. These costs may include pipeline tariffs, operating expenditure and ancillary costs such as compression.

For both the historical and forward LNG netback price series, the average of short-run marginal transportation costs is derived from the most recent data obtained from LNG producers and subtracted from the effective price at the LNG plant (that is, at the point at which gas is delivered to the LNG plant) to give an LNG netback price at the wellhead.

To calculate an LNG netback price at Wallumbilla, the costs of transporting gas from the wellhead to Wallumbilla also need to be taken into account. However, information obtained from LNG producers indicates that, at the time we developed the LNG netback price series, there were no (or negligible) short-run marginal costs incurred in transporting gas to Wallumbilla.

This means that the short-run LNG netback price at the wellhead can effectively be regarded as the LNG netback price at Wallumbilla.

2.3. What does the ACCC's LNG netback price series represent?

The ACCC LNG netback price series is a measure of a supplier's opportunity cost of supplying gas to the domestic market, where the alternative is exporting the gas as LNG.[14]

A key assumption, for example, is that LNG producers have decided to produce excess gas beyond the amount required to meet their long term contracts, and that this excess gas is actually produced (that is, the LNG producer has decided not to lower or delay production to a later period) and is not stockpiled in storage.

Furthermore, the LNG netback price series represents market expectations at a point in time for the various inputs used in its calculation. The forward LNG netback price is not the ACCC's expectation or forecast of what LNG netback prices should or will be at any particular point in time.

When deciding on our approach for the LNG netback price series, we considered the JKM futures price the best available measure for the purpose of providing a price marker. However there are other sources of expectations of future LNG prices, such as those provided by industry experts.

Importantly, there are factors other than LNG netback prices that are likely to influence the final prices paid by domestic gas users, including:

- Non-price terms and conditions — such as take-or-pay levels, daily swing allowances, and GSA quantity and duration
- Transportation costs — the price the buyer is required to pay for gas at a location other than Wallumbilla may also reflect additional transportation costs incurred by the supplier
- Hedging costs — these costs may be passed onto gas buyers if suppliers incur additional costs to hedge against currency or commodity price movements.

2.4. A key limitation of the LNG netback price series

A key limitation of the LNG netback price series is that the forward period is short.

The ACCC currently publishes forward LNG netback prices over a forward period of two years. This is a relatively short period compared to the term of many domestic gas offers and GSAs, which can have a term well beyond two years.

However, a lack of available data has limited the ACCC's ability to publish the current LNG netback price series over a longer forward period. For example:

- Forward LNG netback prices require reliable data on market expectations of what Asian LNG prices will be during the relevant future period. We have used JKM futures prices quoted by ICE. However, the JKM futures market is relatively illiquid compared to some

[14] ACCC, Gas Inquiry 2017–2020 interim report, April 2018.

of the more mature derivatives markets (for example, oil futures).[15] This means that futures quotes are based on a relatively small number of transactions and therefore may be less indicative of market expectations about future prices. However, as noted in section 3, liquidity in JKM has been growing in recent years.

- Assessed forward LNG freight costs between Gladstone and Tokyo are not available beyond a two-year period. This has had the effect of limiting the publication of forward LNG netback prices to a two-year forward period, regardless of liquidity in JKM. However, there may be alternative sources of data on LNG freight costs that could be used for the purposes of calculating longer-term LNG netback prices.

3. Why is the ACCC reviewing LNG netback prices?

In the Gas Inquiry's April 2018 interim report, the ACCC announced that it would publish an LNG netback price series for the course of the current inquiry. When we commenced publishing the LNG netback price series, we advised that we would continue to monitor the LNG netback price series and make any necessary refinements.

We consider that now is the appropriate time to undertake a public review of the LNG netback price series. This reflects:

- Significant changes in the supply of LNG since 2018, with the US in particular seeing substantial growth in LNG liquefaction capacity over 2019 and 2020
- Strong, expected future supply growth in the US, Qatar and elsewhere
- Growing trade in LNG spot markets, which in part reflects the growth in LNG portfolio players and consequently greater US exports of LNG
- Findings from our analysis of the pricing strategies of key suppliers in the east coast gas market.[16]

These developments have implications for either future LNG market dynamics, or for how east coast LNG producers consider the alternatives to supplying the domestic market. In turn, these factors potentially have implications for how the ACCC calculates LNG netback prices.

Furthermore, in December 2020, the Australian Treasurer, the Hon. Josh Frydenberg, contacted the ACCC to request that we undertake a review of the LNG netback price series by the end of September 2021.

3.1. Global liquefaction capacity, and LNG supply, continues to grow

Increases in LNG supply are driving a structural change in global LNG and gas markets, which in turn will have implications for LNG pricing.

In 2020, total global liquefaction capacity was estimated to be around 464 mtpa, a growth of around 5 per cent from 2019.[17] This growth in supply is mostly attributable to new LNG

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15 Oxford Institute for Energy Studies, *European traded gas hubs: the supremacy of TTF*, May 2020, p. 10, https://www.oxfordenergy.org/publications/european-traded-gas-hubs-the-supremacy-of-ttf/, viewed 15 March 2021.

16 ACCC, Gas inquiry 2017–2025 interim report, January 2021, chapter 6.

17 LNG volumes are often quoted in million tonnes per annum (mtpa), where 1 million tonnes of LNG is equivalent to 55 PJ. See McKinsey & Company, *Meeting east Australia's gas supply challenge*, March 2017, p. 12, https://www.mckinsey.com/featured-insights/asia-pacific/meeting-east-australias-gas-supply-challenge, viewed 15 March 2021; Rystad Energy, *Gas year 2020 review: Global gas production exceeded demand, US led liquefaction capacity race*, 11 January 2021, https://www.rystadenergy.com/newsevents/news/press-releases/gas-year-2020-review-global-gas-production-exceeded-demand-us-led-liquefaction-capacity-race/, viewed 11 February 2021.

facilities coming online in the United States, with Russian LNG plants also adding to the growth in liquefaction.

Further, according to Platts, global liquefaction capacity is estimated to further grow by around 3.2 per cent to around 478.5 mtpa in 2021.[18] This expected growth is attributable to LNG facilities coming online in the United States and the restart of Egypt's LNG export terminal, which has remained idle for the last 8 years. Two floating LNG trains, in Australia and Malaysia, will also add to capacity and global supply.

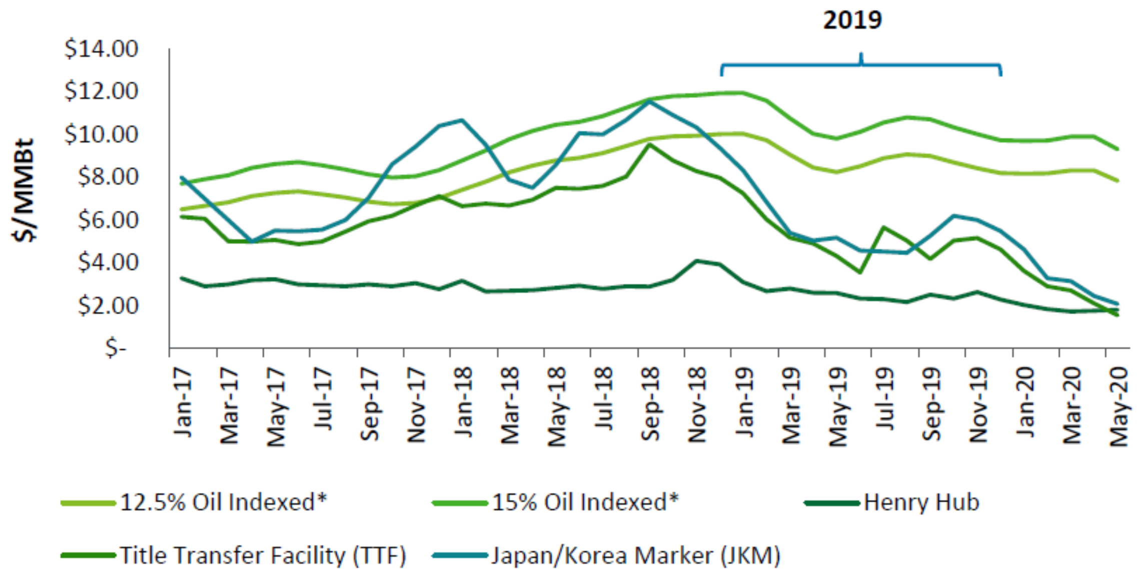
By 2040, global liquefaction capacity is expected to double to 886 mtpa.[19] According to Rystad Energy, a number of key LNG producing countries are expected to significantly increase their LNG liquefaction capacity between 2020 and 2040. For example:

- Australian liquefaction capacity is expected to increase from 87.8 mtpa in 2020 to 96 mtpa in 2040
- Qatari liquefaction capacity is expected to increase from 77.1 mtpa to 124 mtpa in 2040
- US liquefaction capacity is expected to increase from 71 mtpa[20] in 2019 to 220 mtpa in 2040
- Russian liquefaction capacity is expected to increase from 26.8 mtpa in 2020 to 70 mtpa in 2040.

In addition, LNG demand, and trade, continues to grow.

This growth in trade from a range of LNG producing countries, and future growth in demand, will have implications for future LNG market dynamics and pricing trends. The growth in supply from different regions also has the potential to strengthen or weaken the relationship between LNG and gas prices between different regions. Figure 3 below demonstrates how different gas and LNG price markers have evolved over time.

Figure 3: Movements in LNG and gas price markers



[18] S&P Global Platts, *Commodities 2021: Global LNG to continue growth trajectory in 2021 but at slower pace*, 30 December 2020, http://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/123020-commodities-2021-global-lng-to-continue-growth-trajectory-in-2021-but-at-slower-pace, viewed 2 March 2021.

[19] Rystad Energy, *Gas year 2020 review: Global gas production exceeded demand, US led liquefaction capacity race*.

[20] Rystad Energy, *Gas year 2020 review: Global gas production exceeded demand, US led liquefaction capacity race*.

Source: Deloitte, *LNG Market Brief*, July 2020.

Sections 3.1.1 to 3.1.4 provide an overview of LNG liquefaction growth in key exporting countries, and section 3.2 discusses growth of trade in LNG spot markets.

3.1.1. Australia is now the largest LNG exporter

Australia overtook Qatar in 2020 to become the world's largest exporter of LNG.

This reflects Australia's significant growth in LNG production capacity in recent years, which has more than tripled since 2010. Australia currently operates ten LNG export facilities with a combined capacity of 87.8 mtpa.[21]

Australia has three distinct LNG producing regions, which operate on natural gas reserves of around 70 Trillion Cubic Feet (TCF).[22] These regions are effectively separate regions, with Western Australia not physically connected to either the Northern Territory or Queensland. While the Northern Territory is connected to Queensland via a pipeline (which allows for gas to flow from the Northern Territory to Queensland), the NT LNG producers do not currently supply gas into Queensland. For this reason, the ACCC's LNG netback price relates only to the east coast gas market, and not the Northern Territory or Western Australia.

- Western Australia has four onshore LNG projects with a capacity of 46.3 mtpa, and a floating LNG project with a liquefaction production capacity of 3.6 mtpa.[23] Western Australian LNG projects accounted for around 57 per cent of Australia's LNG exports in 2020.[24]
- The Northern Territory has two LNG export projects with a combined capacity of 12.6 mtpa, which in 2020 accounted for 14 per cent of Australia's LNG exports.[25]
- Queensland has three LNG export projects, all located in Gladstone, with a combined capacity of about 25.3 mtpa, which in 2020 accounted for 29 per cent of Australia's LNG exports.[26]

Australia's LNG exports were estimated to be about 79 million tonnes in 2019-20, accounting for about 22 per cent of total global LNG trade. The level of Australia's LNG exports, however, is forecast to decline to around 75 million tonnes in 2020–21. This is primarily due to the impacts of the pandemic as well as technical issues experienced at two LNG plants. Australian LNG exports are expected to recover and, by 2021-22, increase to 80 mtpa.[27]

The bulk of Australian LNG exports (around 75 per cent) are shipped to the northeast Asia to fulfil long-term contractual obligations.[28] In 2020, Japan was Australia's top export destination (38 per cent of Australia's LNG exports), with China (37 per cent) and South Korea (10 per cent) as other top destinations.[29]

21 LNG Industry, *Australia officially the world's largest exporter of LNG*, 6 January 2020, https://www.lngindustry.com/liquid-natural-gas/06012020/australia-officially-the-worlds-largest-exporter-of-lng/, viewed February 2021.

22 Department of Industry, Innovation and Science, *Submission to the Review of the PRRT Gas Transfer Pricing Arrangements*, September 2019, https://treasury.gov.au/consultation/c2019-t364690, viewed 9 March 2021.

23 Department of Jobs, Tourism, Science and Innovation, *Western Australia LNG profile*, January 2021, https://www.wa.gov.au/sites/default/files/2021-02/WA%20LNG%20Profile%20-%20January%202021.docx, viewed 9 March 2021.

24 LNG industry, *Australia officially the world's largest exporter of LNG*.

25 Department of Trade, Business and Innovation, *Northern Territory gas strategy: five point plan*, n.d., https://cmc.nt.gov.au/__data/assets/pdf_file/0019/712450/nt-gas-strategy.pdf, viewed February 2021.

26 LNG industry, *Australia officially the world's largest exporter of LNG*.

27 DISER, Office of the Chief Economist, *Resources and Energy Quarterly*, December 2020, p. 70, https://publications.industry.gov.au/publications/resourcesandenergyquarterlydecember2020/, viewed 9 March 2021.

28 DISER, *Resources and Energy Quarterly,* December 2020, p. 9.

29 Energy Quest, *Australian LNG Monthly December 2020*, 19 January 2021, https://www.energyquest.com.au/energyquest-australian-lng-monthly-december-2020/, viewed 9 March 2021.

Australia has a number of new LNG projects planned for future development, however there has been some uncertainty around the timing for the next wave of investment into these projects. In 2019, an additional 50 mtpa of capacity was indicated to be at the pre-Final Investment Decision (FID) stage.[30] Weaker market conditions have meant that FID for some of these projects was deferred and plans to expand on production capacity delayed. Woodside's Pluto LNG project, in Western Australia, is the only new LNG project that has received FID — it is expected to add 4.9 mtpa of LNG capacity, with the first LNG cargos expected to be produced and shipped in 2026.[31]

3.1.2. The United States has become a major LNG exporter

The United States has seen a substantial increase in LNG export capacity since we developed our approach to the LNG netback price series in 2018, with US LNG export capacity doubling from 39.1 mtpa in late 2018 to 78.3 mtpa in 2020.[32]

By the end of 2020, the United States had 15 liquefaction trains in service at six LNG export projects.[33]

This increase in LNG export capacity resulted in the United States exporting an additional 13.1 million tonnes of LNG in 2019, with total LNG exports of almost 34 million tonnes of LNG in 2019. This saw the US overtake Malaysia to become the third largest LNG exporter in the world, behind only Qatar and Australia. In contrast, Qatar and Australia exported 77.8 million tonnes and 75.4 million tonnes of LNG in 2019, respectively.[34]

Growth in US LNG export capacity is set to continue, with FID reached on two additional LNG projects and seven additional liquefaction trains (at existing facilities), which will increase approved US LNG export capacity by just over 38 mtpa by 2025.

The US government has also approved an additional 13 LNG projects which, if constructed, will increase US LNG export capacity by approximately 200 mtpa (although it is not certain that all 13 projects will reach FID).[35]

This growth in LNG export capacity is predicted to result in the United States being the biggest exporter of LNG by 2025.[36]

The importance of flexibility in US LNG contracts

The substantial increase in US liquefaction capacity, in recent years, has also been reflected in an increase in flexibility in LNG markets, as a result of the more flexible approach to LNG contracting adopted by US LNG projects.

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30 Final Investment Decision (FID) marks the point at which a project has been approved. LNG projects that are at the pre-FID stage have not yet received FID and thus have not yet been approved; International Gas Union (IGU), *2020 World LNG Report*, April 2020, https://www.igu.org/resources/2020-world-lng-report, viewed 2 March 2021.

31 Woodside, *Overview of Pluto Train 2 project*, n.d., https://www.woodside.com.au/what-we-do/australian-operations/pluto-lng, viewed 2 March 2021.

32 ACCC analysis; U.S. Energy Information Administration (EIA), *U.S. liquefaction capacity* [data set], November 2020, https://www.eia.gov/naturalgas/data.php#imports, viewed 2 March 2021.

33 EIA, *U.S. liquefaction capacity*.

34 IGU, *2020 World LNG Report*.

35 EIA, *U.S. liquefaction capacity*.

36 International Energy Agency, *Gas 2020*, June 2020, https://www.iea.org/reports/gas-2020, viewed 9 March 2021.

Traditionally, LNG supply and purchase agreements contained clauses that limited the degree of flexibility that customers had to redirect cargoes away from the import terminals specified in their contracts.[37]

Generally speaking, the LNG supply and purchase agreements entered into by US LNG projects, however, contain a high level of destination flexibility, which allows customers to redirect cargoes to alternate destinations, such as to locations with higher spot prices.[38] In practice, this allows US LNG off-take customers, some of whom are major portfolio LNG traders, to arbitrage between the major LNG markets, such as those in Asia and Europe.

This was observed during the recent spike in Asian LNG spot prices, which saw major portfolio traders divert US and Qatari LNG cargoes, which were bound for Europe, to Asia to take advantage of the difference in prices between Asia and Europe.[39]

In addition, several LNG projects have used a 'tolling model' to underpin the finance required to construct the LNG plants.

Under this type of model, the LNG projects own and operate the liquefaction facilities, but do not invest in upstream gas production facilities or downstream delivery infrastructure. Rather, these project enter into long-term contracts, whereby customers are charged a fixed 'tolling fee', which is paid whether LNG volumes are taken or not (and thus can be considered a sunk cost).[40,41] These tolling fees allow the LNG projects to recover their fixed investment and ongoing operating costs.

These projects also have pricing for feedstock gas linked directly to the US Henry Hub, with customers typically paying a fee equal to 115 per cent of Henry Hub pricing. In addition, market participants are able to trade futures contracts linked to Henry Hub on a number of exchanges, with physical and financial contracts available on a daily, weekly or monthly basis.

This model differs from the more traditional integrated market structure model, in which LNG plants are owned by major gas producers and fixed investment and operating expenses are covered by the sale of LNG under long-term LNG sale and purchase agreements.[42]

These developments, along with increasing US liquefaction capacity, have the potential to increase the importance of Henry Hub gas prices for LNG price formation in Asia. This suggests that the US, at times, may act as the marginal supplier of LNG into Asia, and particularly into the Asian spot market.

3.1.3. Qatar plans to increase its LNG export capacity in coming years

Qatar is a large and growing supplier of LNG into global markets.

Between 2006 and 2019, Qatar was the largest exporter of LNG, with its LNG production capacity and export volumes second only to Australia in 2020.[43]

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37 CME Group, *Will the US be the home of LNG Price Formation?,* 17 July 2019, https://www.cmegroup.com/education/articles-and-reports/will-the-us-be-the-home-of-lng-price-formation.html, viewed 2 March 2021.

38 CME Group, *Will the US be the home of LNG Price Formation?*

39 Reuters, *Analysis: Oil majors beat traders, gas rivals to cash in on LNG price spike*, 19 January 2021, https://www.reuters.com/article/us-lng-majors-analysis-idUSKBN29N21M, viewed 2 March 2021.

40 CME Group, *Will the US be the home of LNG Price Formation?*

41 Under this model, customers are responsible for organising shipping and delivery of gas to LNG import terminals.

42 CME Group, *Will the US be the home of LNG Price Formation?*

43 Reuters, *Australia grabs world's biggest LNG exporter crown from Qatar in Nov*, December 2018, https://www.reuters.com/article/us-australia-qatar-lng-idUSKBN1O907N, viewed 15 March 2021.

In total, Qatar operates 14 LNG trains with a total annual production capacity of 77.4 mtpa[44] and in 2020, Qatar exported around 76 million tonnes of LNG, accounting for almost 22 per cent of global LNG exports.[45]

Similar to the United States, Qatar has outlined plans to increase its LNG production, with liquefaction capacity expected to increase by 43 percent to 110 mtpa by 2025.[46] The second phase of its North Field expansion is expected to increase capacity by an additional 16 mtpa, to 126 mtpa, by the end of 2027.[47]

This expansion in liquefaction capacity reflects Qatar's large proven gas reserves (box 2)

Box 2: Qatari gas reserves

Qatar's North Field is the largest non-associated natural gas field in the world, with recoverable reserves estimated at more than 900 trillion cubic feet (TCF), or approximately 10 to 12 per cent of the world's known gas reserves.[48] Some reports have suggested that these gas reserves may be as large as 1,760 TCF.[49]

In 2017, Qatar removed a 12-year moratorium on the North Fields, which was put in place to provide the Qatari government time to study the impact on the reservoir from a rapid increase in output and protect the long-term health of the gas fields. Qatar has since outlined significant plans to increase its gas production capacity in the near term, and these gas projects have received FID.

Qatar's current share of global LNG trade, and future planned growth, is likely to have short and long-term implications for global LNG trade. This reflects Qatar's low LNG production costs and its geographic location between European and Asian LNG markets.

Qatar is a low cost producer

Qatar, which produces gas under a fully integrated value-chain model, has low gas and LNG production costs compared to other key LNG exporting nations — its estimated LNG production costs are around $USD 4 per MMBtu, which would place Qatar at the lower end of the global LNG cost curve.[50]

Additionally, Qatar's gas production is supported by revenue from the sale of other petroleum products (co-produced alongside gas), which subsidises the production of gas and provides it with a significant competitive advantage with respect to LNG.[51]

In a practical sense, Qatar is likely to be able to produce and continue to supply LNG into the European and Asian markets at prices below the marginal production costs of other LNG producers. As an example, Qatar advised that it would not decrease its LNG production

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44 Qatargas, *About us – North Field*, n.d., https://www.qatargas.com/english/aboutus/north-field, viewed 15 March 2021.

45 DISER, *Resources and Energy Quarterly,* December 2020, p. 75.

46 S&P Global Platts, *Commodities 2021: Qatar buoyed by gas price surge as it forges ahead on LNG expansion*, 12 January 2021, https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/011221-commodities-2021-qatar-buoyed-by-gas-price-surge-as-it-forges-ahead-on-lng-expansion, viewed 15 March 2021.

47 S&P Global Platts, *Commodities 2021: Qatar buoyed by gas price surge as it forges ahead on LNG expansion*.

48 Qatargas, *About us – North Field*, n.d., https://www.qatargas.com/english/aboutus/north-field, viewed 15 March 2021.

49 Wood Mackenzie, *Qatar's LNG expansion, a bold move*, 10 December 2019, https://www.woodmac.com/news/opinion/qatars-lng-expansion-a-bold-move/, viewed 15 March 2021.

50 Qatargas, *Value chain,* 2020, https://www.qatargas.com/english/aboutus/Documents/Qatargas%20Value%20Chain_Final.pdf, viewed 15 March 2021; Wood Mackenzie, *Qatar Petroleum takes FID on North Field East*, 9 February 2021, https://www.woodmac.com/press-releases/qatar-petroleum-takes-fid-on-north-field-east, viewed 15 March 2021.

51 IHS Markit, *Qatar LNG Export Outlook*, n.d., https://ihsmarkit.com/topic/qatar-lng-exports-outlook.html, viewed 15 March 2021.

during 2020, despite reduced demand and low global gas prices.[52] This was during a period in which some US LNG was shut in as prices were too low for those producers to recover even their variable LNG plant and freight costs.[53]

Importantly, Qatar has also flagged its intention, as part of its LNG capacity expansion, to pursue a market share strategy, leveraging its low costs of production to offer LNG contracts at relatively low prices.[54] This has implications for future LNG pricing, but also for future supply — a fall in LNG prices might mean that some proposed LNG projects, in countries other than Qatar, do not receive FID.

Ability to arbitrage between Europe and Asia

Because of its geographic location, Qatar is able to take advantage of arbitrage opportunities between the European and Asian markets, providing it with flexibility in how it responds to unexpected changes in supply and demand in both European and Asian markets.[55] The growth in LNG spot trade potentially increases arbitrage opportunities.

Moreover, given Europe has established re-gasification capacity, the ability to use the fuel for a range of purposes, significant storage capacity, and a range of gas and LNG buyers, it has often acted as a 'sink' for excess LNG cargoes.[56] In effect, this provides LNG sellers with a 'market of last resort', with pricing for LNG cargoes influenced by European gas prices.

In practice, Qatar's ability to arbitrage between Europe and Asia, on the basis of netbacks to either region, means that Asian LNG spot prices may be influenced by gas and LNG prices in Europe. Moreover, as noted by Platts, prices at the Dutch Title Transfer Facility (TTF) gas hub are considered to act as a floor price for Asian LNG spot prices.

3.1.4. Key international LNG projects

Global demand for gas as an alternative to traditional fossil fuels is driving investment in LNG facilities around the world, beyond those discussed above.

In particular, there are several key international LNG projects that are anticipated to commence LNG supply by 2024-25. These projects, which have all reached FID, are at various stages of development.

- **Mozambique** is developing several LNG facilities on dry natural gas reserves of around 100 TCF.[57] It is anticipated, given Mozambique's geographic location, that this LNG will primarily supply the Asian LNG market. [58] Mozambique does not currently supply gas

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52 S&P Global Platts, *Energy minister Kaabi says 'absolutely no way' Qatar would cut LNG production*, 21 May 2020, https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/052120-energy-minister-kaabi-says-absolutely-no-way-qatar-would-cut-lng-production, viewed 15 March 2021.

53 Wood Mackenzie, *US LNG exports slump*, 25 June 2020, https://www.woodmac.com/news/opinion/us-lng-exports-slump/, viewed 15 March 2021.

54 Australian Financial Review, *Qatar flexing muscles in 'overwhelmed' LNG market: Fesharaki*, 15 May 2019 https://www.afr.com/companies/energy/qatar-flexing-muscles-in-overwhelmed-lng-market-fesharaki-20190515-p51ng7, viewed 15 March 2021; Australian Financial Review, *Qatar flexes muscles with cuts to gas prices*, 21 September 2020, https://www.afr.com/companies/energy/qatar-flexes-muscles-with-cuts-to-gas-prices-20200918-p55x4b, viewed 15 March 2021.

55 MDPI, *Swing suppliers and international natural gas market integration*, 14 July 2020, https://www.mdpi.com/1996-1073/13/18/4661/pdf, viewed 15 March 2021.

56 International Gas Union, *2020 World LNG Report*, April 2020; Oilprice.com, *Europe to become an increasingly important LNG market*, 29 January 2019, https://oilprice.com/Energy/Natural-Gas/Europe-To-Become-Increasingly-Important-LNG-Demand-Market.html, viewed 15 March 2021..

57 EIA, *Dry natural gas reserves – Mozambique* [data set], n.d., https://www.eia.gov/international/data/world, viewed 15 March 2021.

58 Mozambique LNG, *About the Mozambique Liquefied Natural Gas Project*, https://www.mzlng.total.com/en/about-mozambique-liquefied-natural-gas-project, viewed 15 March 2021; Nikkei Asia, *Japan Inc. to invest $14bn in LNG*

internationally, however its future production capacity is estimated to be around 30 mtpa by 2024.

- **Canada** is developing LNG facilities on proved natural gas reserves of around 73 TCF.[59] There are currently 18 LNG export facilities proposed for Canada, with a total proposed LNG export capacity of 216 mtpa.[60] While it is unlikely that all of these projects will be sanctioned, a post-FID project on Canada's west coast has begun development of a 14 mtpa LNG facility to supply Asian markets. The shipping distance to Asia from this LNG facility is about 50 per cent shorter than from the US Gulf of Mexico as it avoids the Panama Canal.[61] The plant is scheduled to come online in 2025.[62]
- **Russia** is an active LNG producer with current total production capacity of about 30 mtpa and proven gas reserves of around 1668 TCF (or 24 percent of the world's proven gas reserves).[63] While its current production of LNG is mainly used to service existing LNG contracts with European customers, Russia has announced that it is seeking to increase its supply into Asian markets.[64] Russia has also announced that, as part of its 'Energy Strategy 2035', it intends to increase its LNG production to be between 46 and 65 mtpa by 2024, and between 80 and 140 mtpa by 2035.[65] To achieve these targets, two LNG projects are currently under development. The first of these projects is set to supply 13 mtpa from 2023 and the second to supply 19.8 mtpa by 2026. [66]

3.2. LNG spot market trade is increasing

The proportion of LNG sold into spot markets has increased significantly in recent years, more than doubling over the period from 2011 to 2019, increasing from 10 per cent in 2011 to about 34 per cent in 2019 (figure 4).

This likely reflects a number of factors, including destination flexibility in newer LNG supply and purchase agreements and increasing trade by LNG portfolio traders. It also reflects the growth of LNG demand in China, alongside China's increasing presence in LNG spot markets.[67] These factors suggest that the importance of spot markets will continue to grow. It also potentially will lead to greater price volatility in LNG spot markets.

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development in Africa, 2 July 2020, https://asia.nikkei.com/Business/Energy/Japan-Inc.-to-invest-14bn-in-LNG-development-in-Africa, viewed 15 March 2021.

59 Government of Canada, *Natural gas facts*, n.d., https://www.nrcan.gc.ca/science-data/data-analysis/energy-data-analysis/energy-facts/natural-gas-facts/20067, viewed 15 March 2021.

60 Government of Canada, *Canadian LNG Projects*, n.d., https://www.nrcan.gc.ca/our-natural-resources/energy-sources-distribution/clean-fossil-fuels/natural-gas/canadian-lng-projects/5683, viewed 15 March 2021.

61 Shell, *LNG Canada project overview*, n.d., https://www.shell.com/about-us/major-projects/lng-canada.html, viewed 15 March 2021.

62 S&P Global Platts, *LNG Canada construction delay creates cost uncertainty, clouds world supply*, 2 October 2020, https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/lng-canada-construction-delay-creates-cost-uncertainty-clouds-world-supply-60534296, viewed 15 March 2021.

63 BP, *Statistical Review of World Energy 2020*, p. 32, https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2020-natural-gas.pdf, viewed 15 March 2021.

64 Nikkei Asia, *Russia looks for Asia LNG buyers to blunt Western sanctions' bite*, 14 July 2019, https://asia.nikkei.com/Business/Energy/Russia-looks-for-Asia-LNG-buyers-to-blunt-Western-sanctions-bite2, viewed 15 March 2021; Argus media, Russia doubles pipeline gas contract supplies to China, 6 January 2021, https://www.argusmedia.com/en/news/2174437-russia-doubles-pipeline-gas-contract-supplies-to-china, viewed 15 March 2021.

65 Rice University Baker Institute for Public Policy, *The Future of Russian Gas: A Tale of Two Cities*, 29 June 2020 https://www.bakerinstitute.org/media/files/files/d9a0a4fd/bi-brief-062920-ces-russiangas.pdf, viewed 15 March 2021.

66 NS Energy, *Baltic LNG Project*, n.d., https://www.nsenergybusiness.com/projects/baltic-lng-project/, viewed 15 March 2021; High North News, *Construction of Novatek's Arctic LNG 2 Project Ahead of Schedule*, 16 April 2020, https://www.highnorthnews.com/en/construction-novateks-arctic-lng-2-project-ahead-schedule, viewed 15 March 2021.

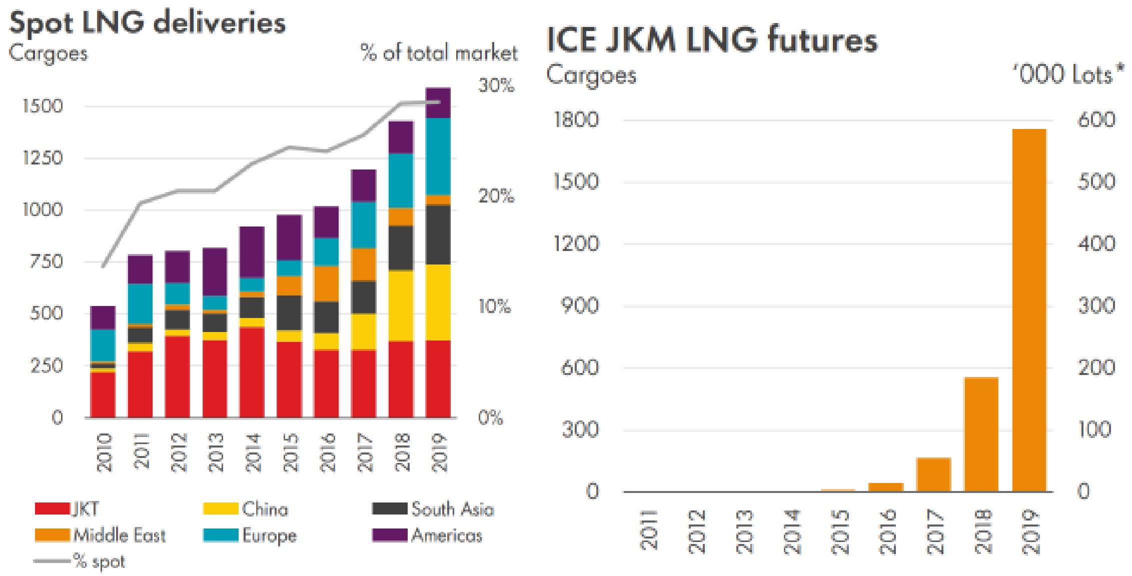
67 The Australian, *China's pursuit of natural gas jolts markets and drains neighbours*, 7 March 2021, https://www.theaustralian.com.au/business/the-wall-street-journal/chinas-pursuit-of-natural-gas-jolts-markets-and-drains-neighbours/news-story/457e378ca3e073919be0086c820030ff?btr=2b7130fad603e9091af010a25e900d37, viewed 15 March 2021.

As shown in figure 4, the number of spot LNG cargoes deliveries into China, on an annual basis, has increased substantially over the ten years to 2019.

Unsurprisingly, Europe has also seen significant growth in LNG spot imports. This likely reflects Europe's ability to absorb LNG spot cargoes (as noted earlier).

By 2019, LNG spot trade has increased to about 30 per cent of global LNG trade.

Figure 4: Growth in spot LNG and JKM futures



Source: Shell LNG Outlook 2020, Shell interpretation of IHS Markit, S&P Global Platts and ICE 2019 data

The increase in LNG spot trade has also, in recent years, coincided with an increase in the level of liquidity in the futures market for JKM, which is an important indicator of future Asian LNG spot prices.

As shown in figure 4, liquidity in JKM in 2019 was about three times higher than that in 2018, which was also about three times higher than that in 2017. Furthermore, the volume of JKM derivatives trades cleared on financial exchanges in the first half of 2020 was over 80 per cent higher than that in the corresponding period in 2019.[68] Also, Platts recently reported that JKM futures had their highest monthly volume of more than 91,500 contracts in January 2021, and average daily volume in JKM LNG futures and options increased 37 percent with open interest up 48 percent year over year.

This growth in liquidity may have broader implications for future LNG spot market pricing trends and could drive further increases in LNG spot trade (by allowing LNG buyers and sellers to manage the risks of spot price movements).

It could also enable the ACCC to publish a longer forward netback price series using the current approach (provided other data limitations could be overcome). As noted in section 4, the ACCC is considering the merits of publishing a longer forward LNG netback price series.

3.3. The ACCC's recent work on pricing strategies suggests other factors may also influence domestic prices

68 S&P Global Platts, *JKM LNG H1 derivatives trade grows 83% on year to 78.8 mt*, 3 July 2020, https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/070320-jkm-lng-h1-derivatives-trade-grows-83-on-year-to-788-million-mt, viewed 15 March 2021.

In 2020, the ACCC obtained and reviewed documents related to the pricing strategies of key suppliers in the east coast gas market. This was motivated by the observed disparity between prices offered in the east coast gas market and expected future LNG netback prices.

Our preliminary findings, presented in the January 2021 interim report, suggest that suppliers continue to view LNG spot prices as an indication of the opportunity costs of supplying the domestic market.[69]

However, the pricing strategy documents obtained by the ACCC suggest that some LNG producers have considered entering into short to medium-term LNG contracts over the past two years (which typically have pricing linked to oil prices). Further, their domestic pricing assumptions – and those of other domestic suppliers – appear to have been influenced by LNG netback prices using supplier assumptions about the prices of such LNG contracts as a reference price.[70]

For example, one producer said that while JKM netback was more relevant for domestic spot prices and 1–2 year GSAs, long-term LNG contract prices were more relevant for multi-year domestic GSAs.[71]

These findings, while preliminary, strongly support a review of the LNG netback price series.

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69 See ACCC, *Gas Inquiry 2017-2025 interim report,* January 2021, p. 101.

70 See ACCC, *Gas Inquiry 2017-2025 interim report,* January 2021, pp. 106–107.

71 See ACCC, *Gas Inquiry 2017-2025 interim report,* January 2021, p. 107.

4. Issues the ACCC is seeking information on

To inform this review, the ACCC is seeking information from stakeholders on a range of issues related to the LNG netback price series, including those set out below. The issues discussed in this section are not exhaustive, and stakeholders do not need to provide a response to all of these issues.

Following this review, the ACCC will implement any changes that are necessary to ensure that the LNG netback price series continues to represent the opportunity cost of supplying gas to the domestic market rather than exporting it as LNG.

4.1. The length of the forward LNG netback price series

The ACCC began publishing the LNG netback price series on the ACCC website in 2018, with forward LNG prices published until the end of the following calendar year — the first update, in September 2018, published forward prices until the end of 2019.

The ACCC has since extended the period over which it publishes forward prices to two years, in part reflecting growing liquidity in JKM. However, as noted in section 2.3, there are data limitations which, with respect to the ACCC's current approach, limit the ACCC's ability to extend the LNG netback price series over a longer forward period.

While the majority of offers for gas supply made in the east coast gas market in recent years are for terms of two years or less, there have also been offers made for longer terms, beyond the two-year period over which forward LNG netback prices are currently published. In practice, this may limit how useful the LNG netback price series is as an input into negotiations between gas suppliers and gas buyers for those longer-term GSAs.

As part of this review, the ACCC will consider whether there is merit in publishing a longer-term LNG netback price series to further increase price transparency, and to inform negotiations for longer gas supply agreements. The ACCC is seeking views and information from stakeholders on this issue.

The ACCC welcomes your feedback on any of the following issues. Where possible, please include supporting information, data and specific examples in your responses.

1. Whether there would be merit in the ACCC publishing a longer-term LNG netback price series.
2. The most appropriate period, or periods, over which to publish forward LNG netback prices, based on market trends in LNG markets and the east coast gas market.
3. Whether the ACCC should publish multiple forward LNG netback prices, based on different periods (to inform pricing for different GSA terms).
4. How important it is that the length of the forward LNG netback price series is consistent with the duration of domestic GSAs.
5. Whether there are relevant market benchmarks for a longer forward LNG netback price series, or methods/approaches to deriving such market benchmarks.
6. Issues that should be considered in calculating a longer-term LNG netback price series.

In providing your comments in response to these issues, you may want to consider the following (where possible, please provide specific examples, information and data to support your comment):

- The specific forward term or period, in years, for a longer-term LNG netback price series.

- Whether a longer-term series should be published in addition to the ACCC's current shorter-term LNG netback price series.

4.2. LNG netback price methodology

4.2.1. LNG price

As noted in section 2, an LNG price is used as the starting point for calculating an LNG netback price.

In practice, there are a range of LNG prices that could potentially be used for calculating an LNG netback price — for example, prices in Asian LNG spot markets and in short to medium-term LNG contracts (which may be linked to the prices of other commodities, such as oil).

In addition, some gas users have suggested that other price markers, in particular the US Henry Hub, should be used for calculating the LNG netback price series.[72] This partly reflects differences in the level of liquidity between Asian LNG spot markets and the Henry Hub, with the Henry Hub also trading over a longer forward period. It also reflects the rapid increase in US liquefaction capacity in recent years, and the ability of LNG buyers and traders to arbitrage between Asian and European markets, which may increase the influence of Henry Hub pricing on Asian LNG market dynamics and pricing.

There is also potential for European gas hub prices (specifically prices at the Dutch TTF and English NBP hubs) to influence pricing dynamics in Asia, given the slated expansion in liquefaction capacity in Qatar, and Europe's ability to act as a 'sink' for excess LNG.

The choice of an appropriate LNG price or price marker is an important consideration in this review (box 3 provides a brief overview of a number of, but not necessarily all, relevant price markers). In principle, the price marker used to calculate LNG netback prices would not only be relevant to pricing in the east coast gas market, but also be based on a transparent and liquid market.

A further issue is the volatility of daily spot prices that underpin the LNG netback price series. This volatility may reduce the value of the series and disguise longer term trends. One way to address this is to publish LNG netback prices based on average price observations — that is, LNG netback prices that are calculated using an average of daily spot prices over a specified period. The use of an averaging approach also requires consideration of the period over which to average — a shorter period would be more likely to reflect recent market expectations, whereas a longer period would be more likely to show pricing trends.

Box 3 – Gas and LNG price markers

Japan Korea Marker (JKM) – The JKM reflects the daily spot value of LNG cargoes delivered into northeast Asia, as assessed by S&P Global Platts ('Platts'). Several financial exchanges also allow trade in financial futures contracts for JKM, with futures price published daily.

Henry Hub – Henry Hub is a physical distribution hub located in Erath, Louisiana USA, that connects several US natural gas markets via interstate and intrastate pipelines. The Henry Hub also has a direct connection to several LNG export facilities. It is the pricing and delivery point for US natural gas spot and futures contracts.

72 Australian Financial Review, *'Strip out export costs': Gas buyers escalate pricing debate*, 1 February 2021, https://www.afr.com/companies/energy/strip-out-export-costs-gas-buyers-escalate-pricing-debate-20210201-p56ye8, viewed 15 March 2021.

Title Transfer Facility (TTF) – The TFF is a virtual trading point for the exchange of natural gas in the Netherlands, operated by Dutch natural gas infrastructure and transportation company Gasunie. It is the pricing and delivery point for Dutch natural gas spot and futures contracts.

National Balancing Point (NBP) – The NBP is a virtual trading point for the exchange of natural gas in the United Kingdom, operated by UK energy company National Grid. It is the pricing and delivery point for UK natural gas spot and futures contracts.

Oil-Linked – The price of natural gas is often indexed to the price of crude oil. In particular, long-term contracts for LNG exports to Asia have traditionally been linked to the price of crude oil due to historic views on substitutability in Asian LNG import markets. Natural gas can be sold via oil-linked spot, short-term and long-term contracts.

The ACCC is seeking views and information from stakeholders on which LNG prices or price markers should be used for the LNG netback price series.

The ACCC welcomes your feedback on any of the following issues. Where possible, please include supporting information, data and specific examples in your responses.

7. The influence of international gas markets on pricing in the east coast gas market.
8. The relevance of different international LNG and gas price markers for LNG pricing in key LNG export markets and the east coast gas market.
9. Whether the relevance of different LNG and gas price markers is different for short-term versus long-term LNG netback prices.
10. Whether the relevance of different LNG and gas price markers, for the LNG netback price series, is likely to change over time.
11. Whether the ACCC should consider additional methodological approaches, such as averaging, to account for the impact of price volatility of price markers on calculated LNG netback prices.
12. Any other issues that should be considered when determining which LNG and gas reference price should be used for the ACCC LNG netback price series.

In providing your comments in response to these issues, you may want to consider the following (where possible, please provide specific examples, information and data to support your comment):

- The key LNG export markets, including for LNG exported from Queensland, both now and into the future.
- The advantages and limitations of different LNG and gas price markers.

4.2.2. LNG freight costs

LNG freight costs are an important component in calculating an LNG netback price. This is because LNG prices are often expressed on the basis of delivered LNG — for example, JKM is an assessed price for LNG delivered into northeast Asia.[73] As such, it is necessary to deduct, or ‘net back’, shipping costs to calculate an LNG netback price.

The ACCC currently sources historical LNG freight data from Platts, and an assessed forward freight curve from Argus Media (with the curve extending over a two-year forward period) (section 2.2).

However, as noted earlier, the ACCC is considering the merit of increasing the LNG netback price series over a longer forward period — this will require longer-term estimates of LNG freight rates.

73 US LNG, on the other hand, is often priced on a FOB basis — that is, on the basis of the buyer taking delivery of the LNG at the LNG plant.

There are several LNG freight data sources that could potentially be used to calculate a longer-term LNG netback price series. These include data from market analysts and data from financial exchanges that list LNG freight futures products (for example, the Intercontinental Exchange recently announced its intention to list a futures product for the Spark25S LNG freight rate assessments produced by Spark Commodities).

The ACCC seeks views and information from stakeholders on possible sources for LNG freight cost data that could be used to calculate a longer-term forward LNG netback price series.

The ACCC welcomes your feedback on any of the following issues. Where possible, please include supporting information, data and specific examples in your responses.

13. Available data sources for longer-term LNG freight rates (beyond a period of two years), and whether the appropriate data source would be different if different international LNG and gas price markers were used to calculate LNG netback prices.
14. Whether northeast Asia should be considered the appropriate delivery location for the purposes of estimating LNG freight costs for LNG exported from Gladstone.
15. Any other issues that should be considered when sourcing longer-term LNG freight rates.

In providing your comments in response to these issues, you may want to consider the following (where possible, please provide specific examples, information and data to support your comment):

- Sources of available data on longer-term LNG freight rates.
- Availability of proxies for longer-term LNG freight rates.

4.2.3. Conversion to $AUD/GJ

The next step in calculating an LNG netback price is to convert the Gladstone FOB price from $USD/MMBtu to $AUD/GJ, which is done as follows.[74]

- The ACCC converts from MMBtu to GJ using a conversion factor of 1:1.055 (that is, 1 MMBtu is equal to 1.055 GJ).
- The ACCC uses a five-day average (ending on the day of the JKM futures quote) of exchange rates published by the Reserve Bank of Australia to convert from $USD to $AUD.

These conversions result in a Gladstone FOB price in $AUD/GJ.

While we currently use a contemporary measure of exchange rates for the above conversion, there are potentially other data sources, such as prices traded in currency futures, that could be used for converting LNG prices from $USD to $AUD.

The ACCC is seeking views and information from stakeholders on whether the current approach remains fit-for-purpose.

The ACCC welcomes your feedback on any of the following issues. Where possible, please include supporting information, data and specific examples in your responses.

16. Whether the ACCC’s current approach to converting FOB LNG prices to $AUD/GJ is appropriate.

[74] The Gladstone FOB price refers to a price for LNG loaded onto a ship at Gladstone, which is calculated as the delivered LNG price minus LNG freight costs.

17. Alternative approaches that should be considered by the ACCC.
18. Any other issues that should be considered when converting FOB LNG prices to $AUD/GJ.

4.2.4. LNG plant costs

For a given measure of Gladstone FOB prices in $AUD/GJ, the next step in the calculation of LNG netback prices is to deduct LNG plant costs.

As noted in section 2, the ACCC has used estimates of short-run marginal LNG plant costs for the LNG netback price series. These are defined as those costs that would be avoided by LNG producers if the excess gas that would otherwise be converted to LNG and sold into the Asian LNG spot market was instead diverted to the east coast gas market.

These costs include the value of the gas that is consumed as fuel during the liquefaction process, as well as LNG plant operating expenditure. However, the ACCC's current approach does not include deducting the capital costs incurred by the LNG producers in building the Gladstone LNG plants.

This approach was outlined in the Gas Inquiry's December 2017 report, and most submissions received by the ACCC either did not provide feedback on this or suggested that it was a suitable approach. However, several stakeholders raised concerns with the proposed approach, and more recently a number of gas users have argued that the ACCC's current approach to plant costs is not suitable.

Specifically, a number of gas users have suggested that the ACCC should also deduct from the LNG netback price a component to reflect the capital costs associated with developing and constructing the LNG plants. The ACCC notes that, given the large capital costs of building LNG plants, deducting capital costs would be likely to materially lower calculated LNG netback prices.

The ACCC considers it appropriate to consider how LNG plant costs are accounted for when calculating the LNG netback price series; particularly as the ACCC is considering the merits of extending the period over which forward LNG netback prices are published.

As such, the ACCC is seeking views and information from stakeholders on the treatment of LNG plant costs for calculating short-term and longer-term LNG netback prices.

The ACCC welcomes your feedback on any of the following issues. Where possible, please include supporting information, data and specific examples in your responses.

19. Whether the ACCC's current approach to deducting LNG plant and liquefaction costs is appropriate.
20. How LNG plant and liquefaction costs should be accounted for when calculating the LNG netback price series.
21. Whether different approaches to LNG plant costs should be used for different reference price markers.
22. Whether different approaches to LNG plant costs should be used for short-term and longer-term LNG netback prices.
23. Any other issues that should be considered when accounting for LNG plant and liquefaction costs.

In providing your comments in response to these issues, you may want to consider the following (where possible, please provide specific examples, information and data to support your comment):

- The reasons for adopting different approaches to deducting LNG plant and liquefaction costs.
- The treatment of short-run versus long-run LNG plant and liquefaction cost factors.

4.2.5. Pipeline transportation costs

The final step in calculating the LNG netback price series is to account for pipeline transportation costs. There are two components to this:

1. Accounting for short-run marginal pipeline transportation costs from the wellhead to the LNG plant. These costs may include pipeline tariffs, operating expenditure and ancillary costs such as compression.
    - The ACCC uses information obtained from the three Queensland LNG producers on short-run marginal transportation costs from the wellhead to the LNG plant, to calculate an average of the LNG producers' short-run marginal cost.
    - For both the historical and forward LNG netback price series, the average of short-run marginal transport costs (derived from the most recent data obtained from LNG producers) are subtracted from the effective price at the LNG plant inlet — this gives an LNG netback price at the wellhead.
2. Accounting for the costs of transporting gas from the wellhead to Wallumbilla, to calculate an LNG netback price at Wallumbilla.
    - The information obtained from LNG producers indicates that the short-run marginal costs they incur in transporting gas to Wallumbilla are negligible.
    - The ACCC has therefore taken short-run marginal costs of transporting gas from the wellhead to Wallumbilla to be zero in both the historical and forward LNG netback price series.

Similar to LNG prices, the ACCC considers it appropriate to review the treatment of pipeline transportation costs in calculating LNG netback prices, and is seeking views and information from stakeholders on this issue.

The ACCC welcomes your feedback on any of the following issues. Where possible, please include supporting information, data and specific examples in your responses.

24. Whether the ACCC's current approach to deducting pipeline transportation costs is appropriate.
25. How pipeline transportation costs should be accounted for when calculating the LNG netback price series.
26. Whether different approaches to pipeline costs should be used for short-term versus longer-term LNG netback prices.
27. Any other issues that should be considered when accounting for pipeline transportation costs.

In providing your comments in response to these issues, you may want to consider the following (where possible, please provide specific examples, information and data to support your comment):

- The reasons for adopting different approaches to deducting pipeline transportation costs.
- The treatment of short-run versus long-run pipeline transportation cost factors.