



LNG Imports on End User Prices



Results presentation | 15/03/2024



Contents or steps



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Our Goal

Where are we looking at gas prices, and for what types of consumers.

02

Methodology

Our conceptual framework, brief structure and sources used within analysis.

03

Results

What were the price impacts of different interventions?



Our Goal



01

What are we assessing?



Decisions Made Today

There is a forecast shortfall in gas supply. Government and industry must make decisions about how to supply gas in the future.



Future Gas Supply

LNG import terminals or new domestic extraction facilities are built. Developing into different gas supply scenarios.



End User Prices Change

End user prices in NSW, VIC and SA are affected by the changed input costs under each scenario

How will today's decisions, and the future source of supply, affect end user prices?



LNG Imports

- Develop new LNG import terminals in Port Kembla and Geelong
- We look at different scenarios for how often prices are set by LNG import costs



Domestic Production

- Develop additional 2C gas reserves, primarily in QLD and NT, and supply to the market at AEMO's forecast economic production cost.
- No need for LNG terminals to account for supply shortfall



Both options significantly affect the cost of supplying gas

Methodology



02

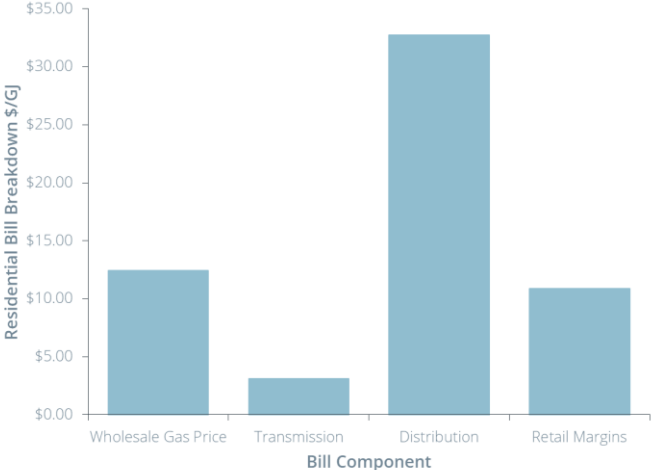
Framework



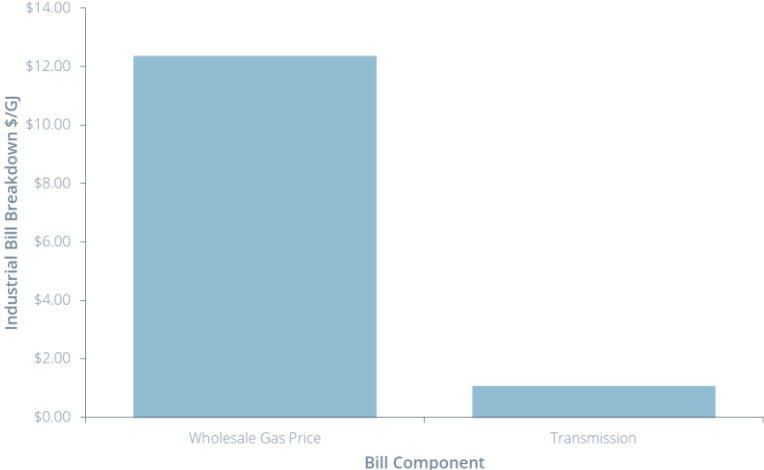
Break bills into different components based on latest public estimate.

For each scenario we construct estimates of totals bills faced by residential and industrial customers in 3 cities, based on forecasts of each bill component.

Residential Bill Breakdown



Industrial Bill Breakdown



Wholesale Gas Price Estimates



Scenario	Method
New Domestic Supply	<p>➤ We use AEMO estimates of production costs at each notable gas field in eastern Australia.</p> <p>We estimates production costs from Bowen/Surat and from Beetaloo.</p>
LNG Imports set price in winter	<p>➤ We assume gas is obtained on the international market, at the JKM price, with additional charges for shipping to Australia and regassification costs.</p> <p>We assume LNG import prices only set the market price in winter, using seasonal demand estimates to create an average price paid for gas across the year.</p>
LNG Imports set price all year	<p>➤ We assume gas is obtained on the international market, at the JKM price, with additional charges for shipping to Australia and regassification costs.</p> <p>We assume LNG import prices set the market price all year.</p>

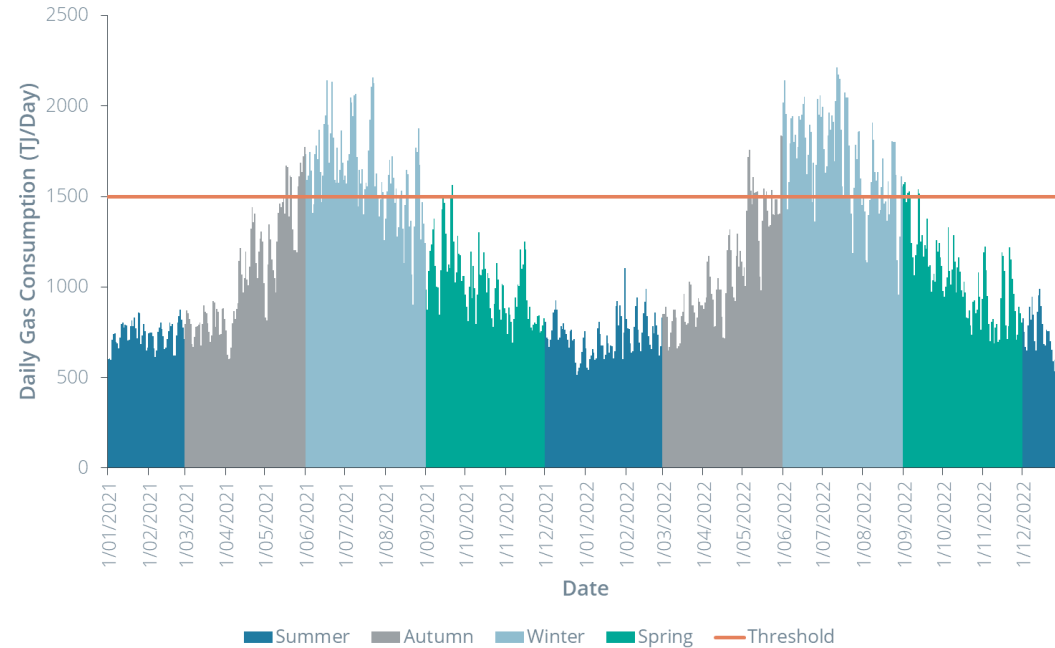
Patterns of seasonal demand, and implications for marginal prices



In southern States (NSW, VIC, SA) gas demand is substantially higher in the winter months. With an average daily consumption over 1600TJ and 75% of days have demand over 1500TJ, with the next highest season (Autumn) having an average of 1082 TJ/day and only 12% of days exceed 1500TJ consumption.

With higher demand in winter, there is the prospect that prices will be set by LNG imports in winter even if LNG imports are not necessary to meet demand all year. Even if prices are marginal only in winter, this still accounts for a large share of total demand.

We test a scenario in which LNG imports set the price only in winter and a scenario in which LNG imports set the price all year.



Transmission Fees



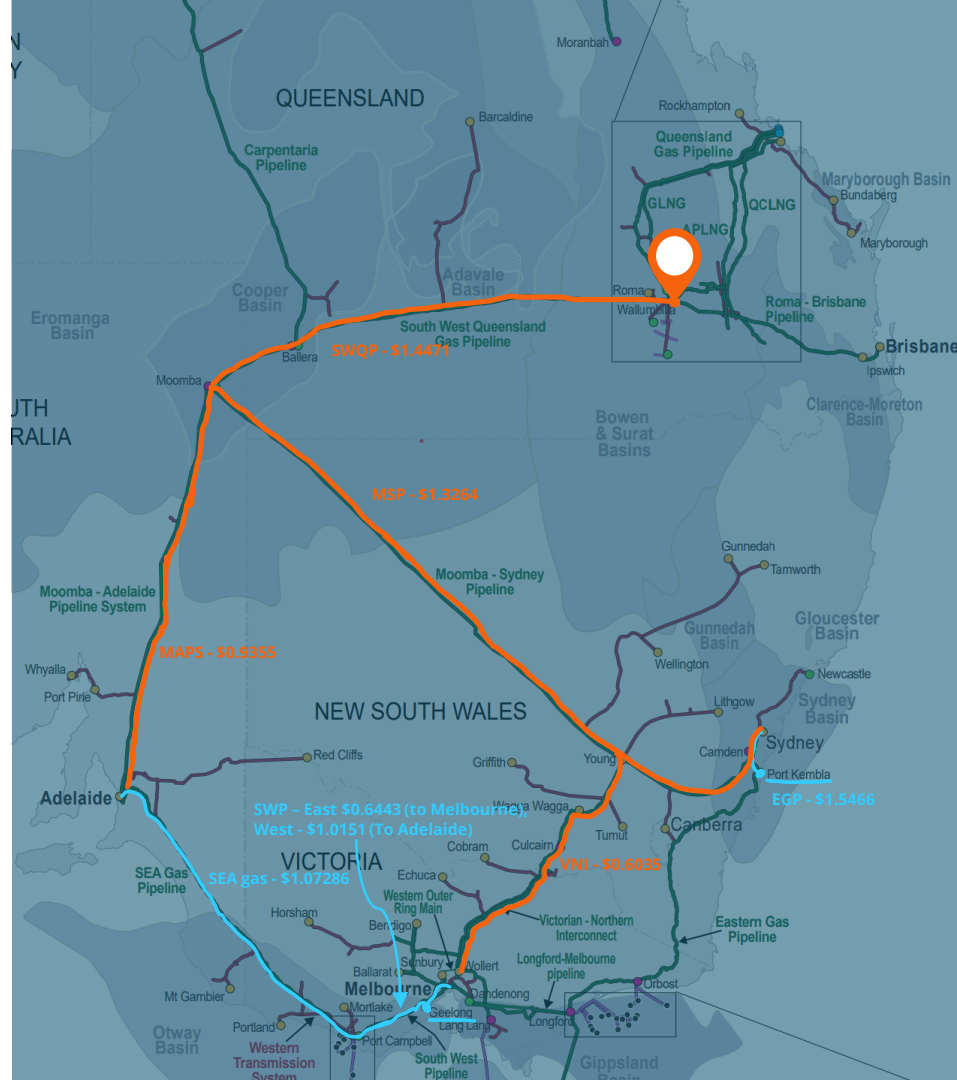
Different sources of gas leads to different transmission fees, as different pipelines are used.

Domestic Production - New gas production will be based in Queensland or in Northern Territory, before being shipped long distance to other cities.

LNG Import terminals - Assume they are constructed in Geelong and Port Kembla, close to major centres. Reducing overall transmission fees.

Fees are determined using published tariffs and are then scaled by load factor to estimate the charges faced by residential and industrial customers in **demand zones**.

Pipeline flows – Bowen/Surat production and LNG imports



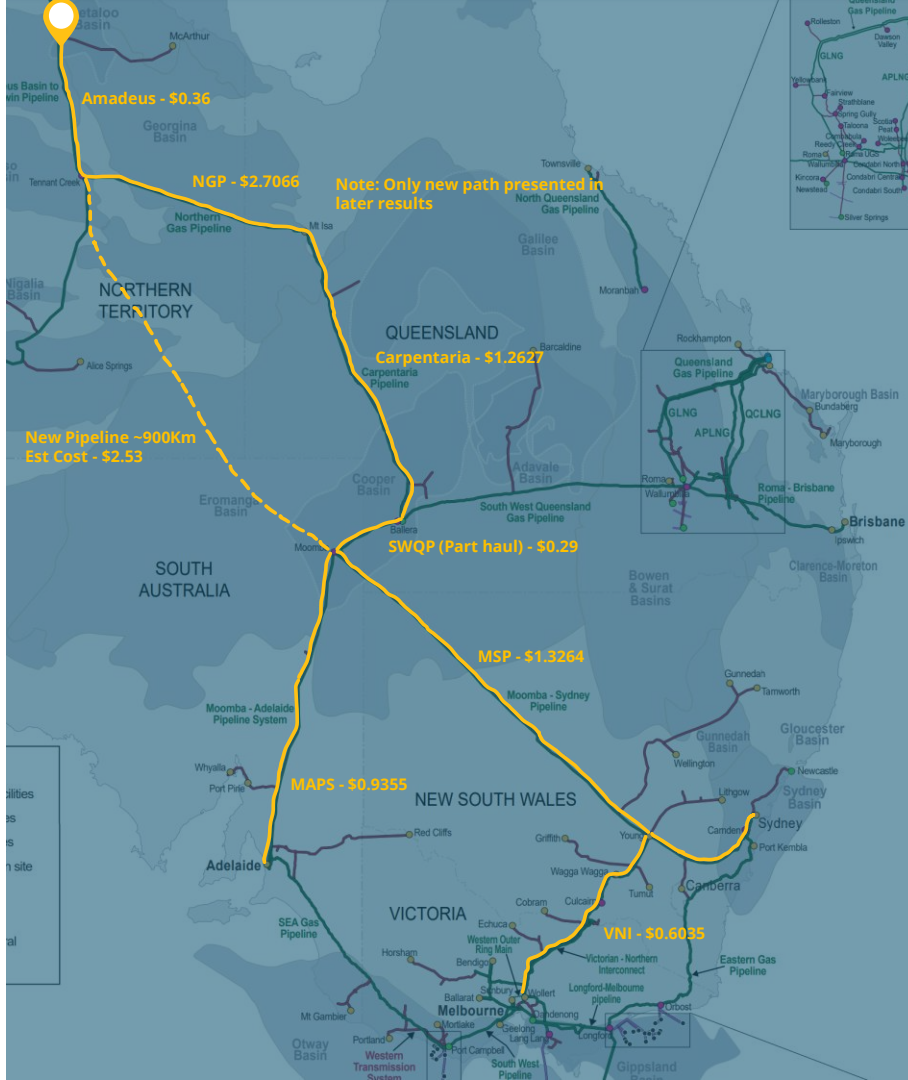
- Domestic production at Bowen/Surat basin, transmission path and costs \$/GJ

Adelaide: \$2.38
 Sydney: \$2.31
 Melbourne: \$2.91

- LNG Import locations (Port Kembla and Geelong), paths and transmission costs \$/GJ

Adelaide (from Geelong): \$2.09
 Sydney (from Port Kembla): \$1.55
 Melbourne (from Geelong): \$0.64

Pipeline flows – Beetaloo production



● Beetaloo basin location, transmission path and costs.

Existing pipeline:

Adelaide: \$5.55

Sydney: \$5.95

Melbourne: \$6.02

With new pipeline (est. \$/GJ):

Adelaide: \$3.83

Sydney: \$4.22

Melbourne: \$4.82

We present results for a new pipeline case

Retailer and Distribution Charges



Distribution Charges

Distribution charges are modelled by taking the published tariffs of the primary GDB in each city and applying these fees to AEMO's data for the average seasonal gas usage for each city.



Retailer Fees

Retailer fees for residential customers are held to the same proportions of the bill as in 2017.

For industrial customers they are set to 5% of the total bill.



Constant across Scenarios

These charges remain constant across the two scenarios.

Major Sources



AEMO



GSOO – domestic extraction cost estimates, pipeline tariffs

ACCC



Publish a report containing LNG netback price forecasts

Jemena, AGN



Publish their distribution tariffs for each region

Oakley Greenwood



2017 report breaking down components of residential and industrial bills in each state

Results – supply from Bowen/Surat



03

Adelaide Price Forecasts – domestic from Bowen/Surat

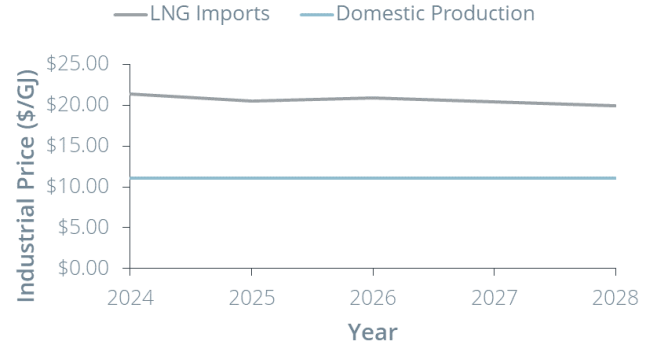
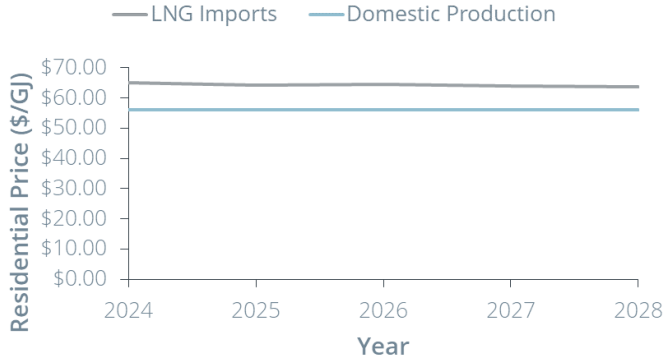
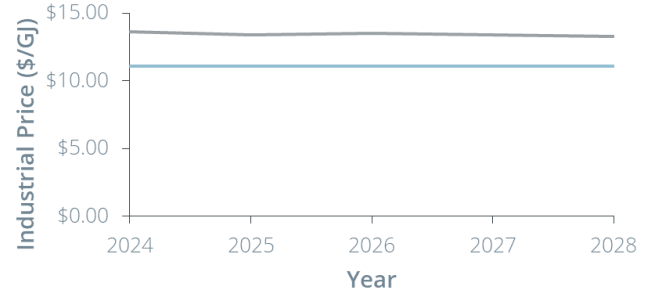
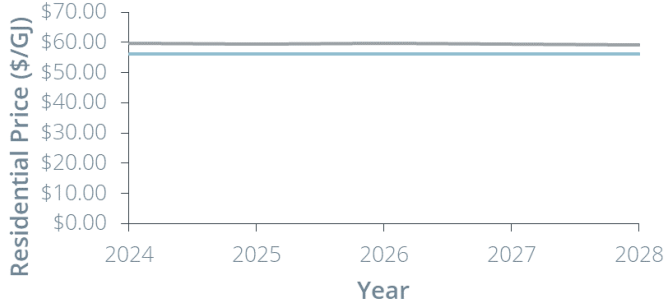


Residential Customers

Industrial Customers

LNG Imports set price in winter

LNG Imports set price all year



—LNG Imports —Domestic Production

—LNG Imports —Domestic Production

Melbourne Price Forecasts – domestic from Bowen/Surat

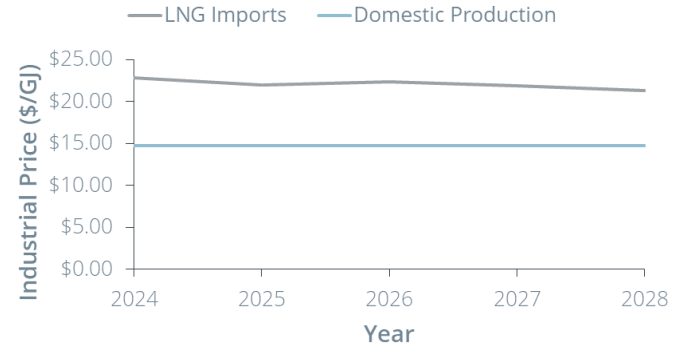
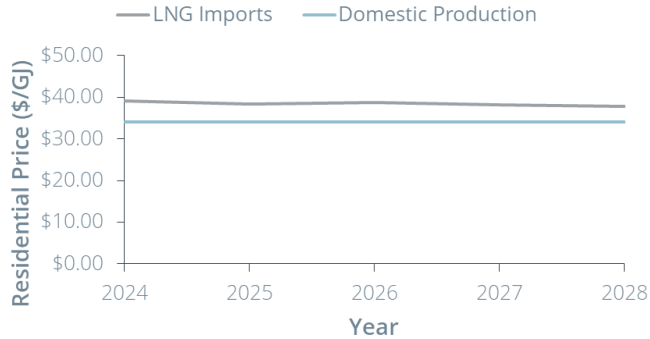
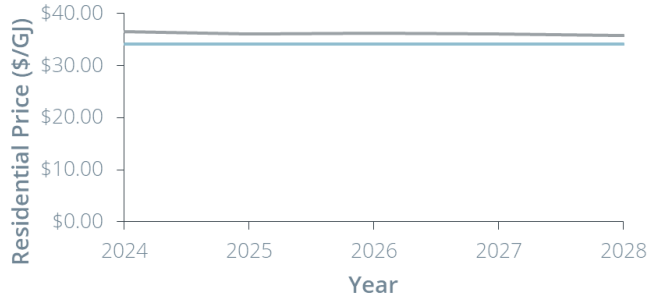


Residential Customers

Industrial Customers

LNG Imports set price in winter

LNG Imports set price all year



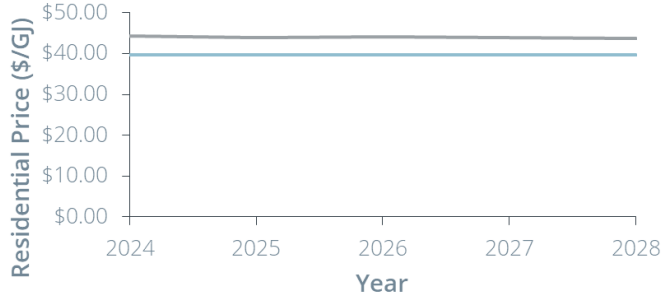
Sydney Price Forecasts – domestic from Bowen/Surat



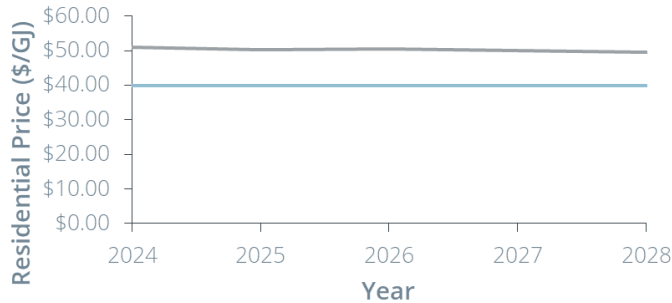
LNG Imports set price in winter

LNG Imports set price all year

Residential Customers

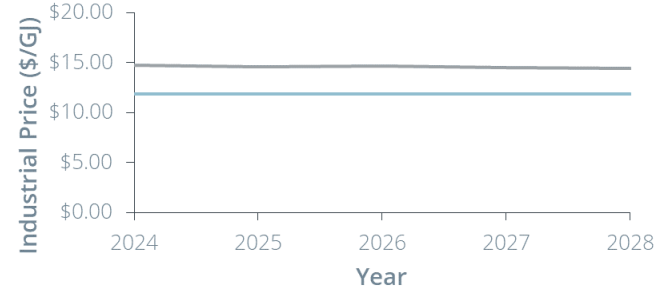


— LNG Imports — Domestic Production

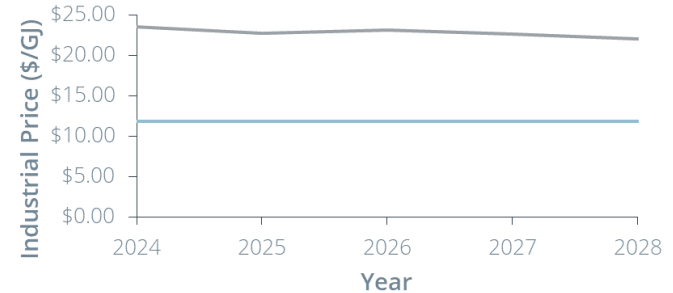


— LNG Imports — Domestic Production

Industrial Customers



— LNG Imports — Domestic Production



— LNG Imports — Domestic Production

Alternative pipeline tariffs options



Differences were noted between tariff estimates seen in AEMO's 2023 GSOO estimates, the ACCC's reported pipeline tariffs and APA's data on available tariffs.

We have included results for the following three sources within the subsequent slides.

- AEMO's 2023 GSOO pipeline cost estimates
- ACCC's pipeline tariffs data, however they do not report on all pipelines, so AEMO estimates are used in these cases
- Published tariffs and multi-asset discounts provided by APA.



LNG Imports set price in winter

The table below shows the percentage increase in retail prices if imported LNG sets the market price in winter. Results show that prices will be increased for residential and industrial customers in all regions if we rely on imported LNG in winter.

These increases are relative to domestic supply from **Bowen/Surat**. Utilizing AEMO GSOO pipeline Tariffs

Location	Residential Change	Industrial Change
Adelaide	6%	24%
Melbourne	7%	14%
Sydney	11%	25%

The following figures use ACCC data where available

Location	Residential Change	Industrial Change
Adelaide	6%	22%
Melbourne	7%	14%
Sydney	8%	22%

The following figures use published pipeline tariffs and multi asset discounts provided by APA

Location	Residential Change	Industrial Change
Adelaide	7%	26%
Melbourne	10%	19%
Sydney	10%	24%



LNG Imports set price in winter – Sensitivity to alternative LNG forecasts



In line with the ACCC's LNG netback series we have used Brent futures to model the future global LNG price over longer term. This series has a relatively low future brent price under \$80 USD/bbl, in comparison with the Energy Information Agency's forecast of over \$88 USD/bbl.

Below is the percentage increase in retail prices compared using the ACCC's LNG netback series and the EIA's forecast of Brent prices.

Location	Residential Savings - ACCC	Residential Savings - IEA	Industrial Savings - ACCC	Industrial Savings - IEA
Adelaide	6%	9%	24%	34%
Melbourne	7%	13%	14%	21%
Sydney	11%	15%	25%	35%

LNG Imports set price all year

The table below shows the percentage increase in retail prices if imported LNG sets the market price all year. Results show that prices will be increased for residential and industrial customers in all regions if we rely on imported LNG all year, and the increases will be materially higher than if we rely on imported LNG only in winter.

These increases are relative to domestic supply from **Bowen/Surat**.

Location	Residential Change	Industrial Change
Adelaide	15%	95%
Melbourne	14%	55%
Sydney	28%	101%

The following figures use ACCC data where available

Location	Residential Change	Industrial Change
Adelaide	14%	87%
Melbourne	14%	56%
Sydney	21%	86%

The following figures use published pipeline tariffs and multi asset discounts provided by APA

Location	Residential Change	Industrial Change
Adelaide	18%	102%
Melbourne	22%	76%
Sydney	24%	98%

LNG Imports set price all year – Sensitivity to alternative LNG forecasts



In line with the ACCC's LNG netback series we have used Brent futures to model the future global LNG price over longer term. This series has a relatively low future Brent price under \$80 USD/bbl, in comparison with the Energy Information Agency's forecast of over \$88 USD/bbl.

Below is the percentage increase in retail prices compared using the ACCC's LNG netback series and the EIA's forecast of Brent prices.

Location	Residential Savings - ACCC	Residential Savings - IEA	Industrial Savings - ACCC	Industrial Savings - IEA
Adelaide	15%	23%	95%	136%
Melbourne	14%	27%	55%	86%
Sydney	28%	39%	101%	139%

Results – supply from Beetaloo



04

Adelaide Price Forecasts – domestic from Beetaloo

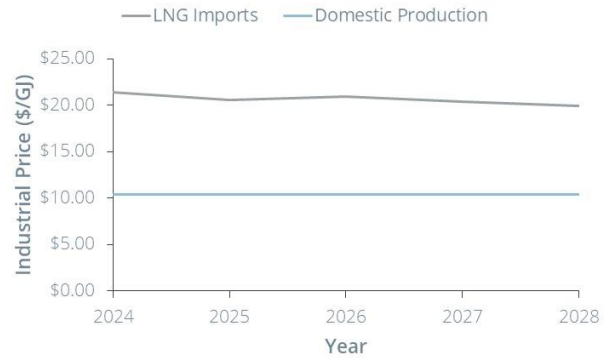
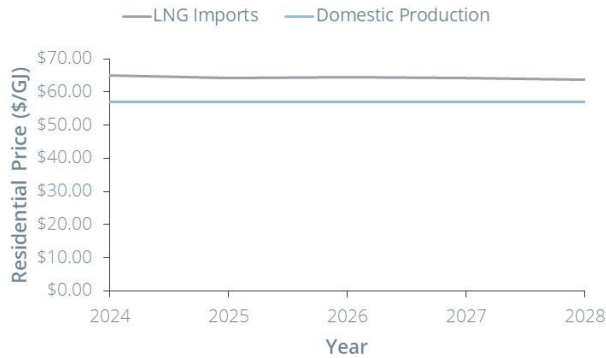
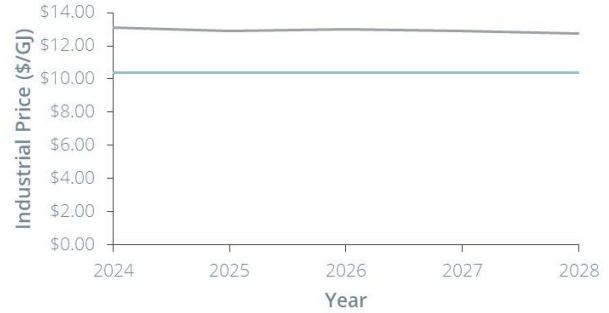
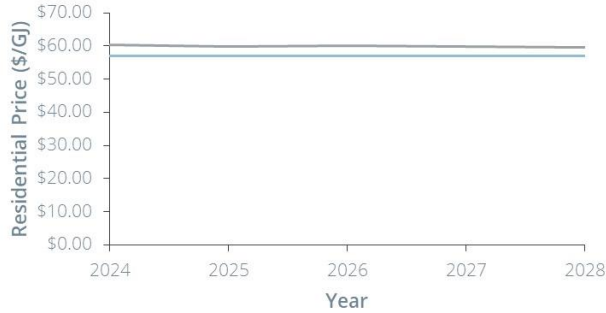


Residential Customers

Industrial Customers

LNG Imports set price in winter

LNG Imports set price all year



— LNG Imports — Domestic Production

— LNG Imports — Domestic Production



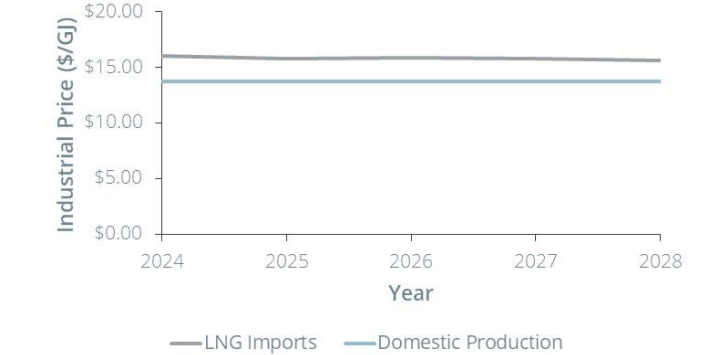
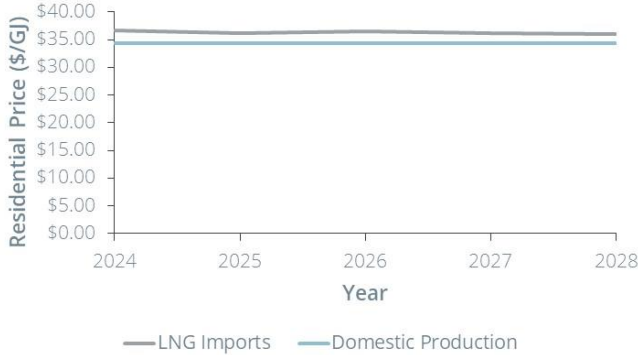
Melbourne Price Forecasts – domestic from Beetaloo



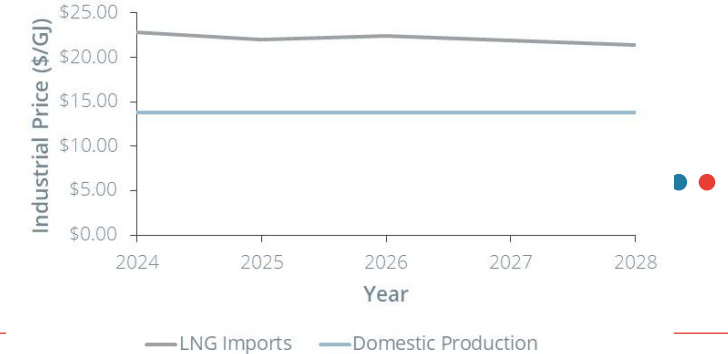
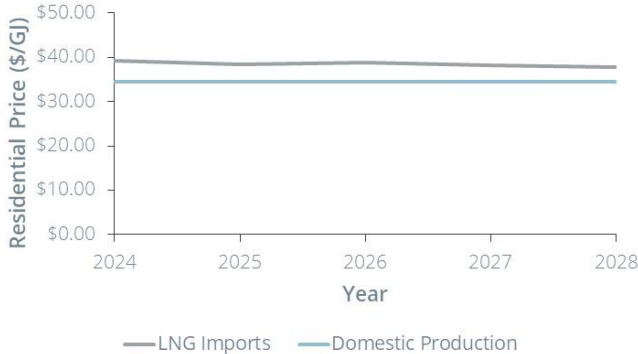
Residential Customers

Industrial Customers

LNG Imports set price in winter



LNG Imports set price all year



Sydney Price Forecasts – domestic from Beetaloo

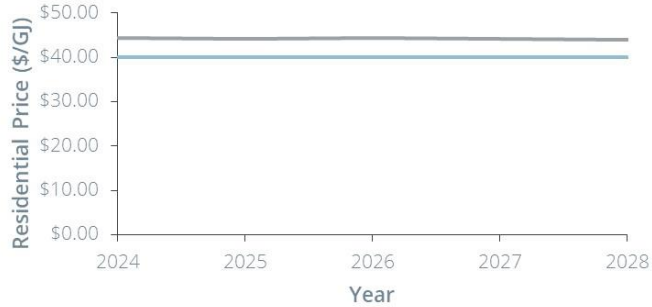


Residential Customers

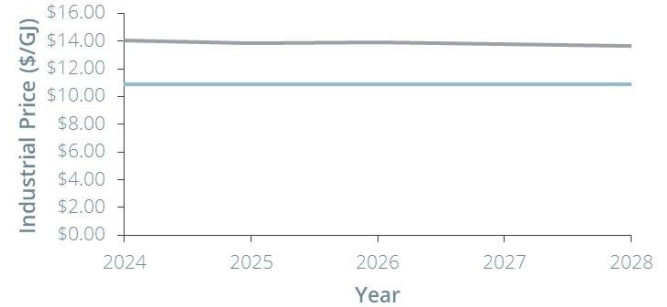
Industrial Customers

LNG Imports set price in winter

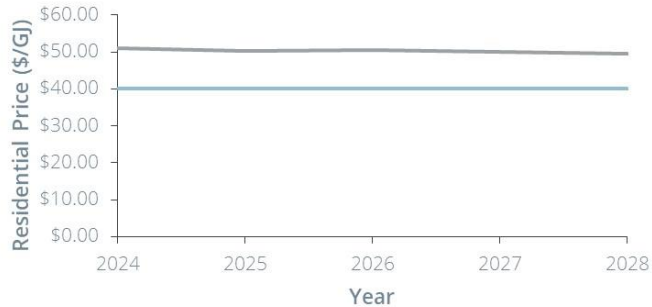
LNG Imports set price all year



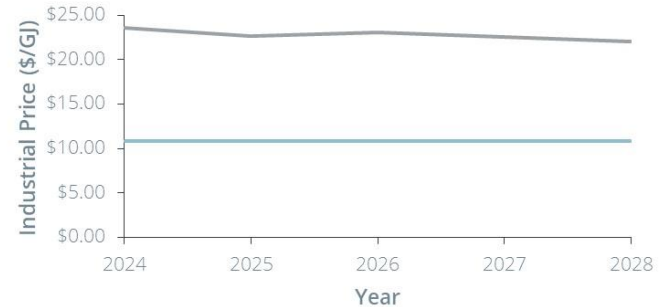
— LNG Imports — Domestic Production



— LNG Imports — Domestic Production



— LNG Imports — Domestic Production



— LNG Imports — Domestic Production

LNG Imports set price in winter

The table below shows the percentage increase in retail prices if imported LNG sets the market price in winter. Results show that prices will be increased for residential and industrial customers in all regions if we rely on imported LNG in winter.

These increases are relative to domestic supply from **Beetaloo**.

Location	Residential Change	Industrial Change
Adelaide	5%	25%
Melbourne	6%	15%
Sydney	10%	28%

The following figures use ACCC data where available

Location	Residential Change	Industrial Change
Adelaide	5%	25%
Melbourne	6%	15%
Sydney	7%	24%

The following figures use published pipeline tariffs and multi asset discounts provided by APA

Location	Residential Change	Industrial Change
Adelaide	7%	28%
Melbourne	7%	19%
Sydney	7%	24%



LNG Imports set price all year



The table below shows the percentage increase in retail prices if imported LNG sets the market price all year. Results show that prices will be increased for residential and industrial customers in all regions if we rely on imported LNG all year, and the increases will be materially higher than if we rely on imported LNG only in winter.

These increases are relative to domestic supply from **Beetaloo**.

Location	Residential Change	Industrial Change
Adelaide	13%	99%
Melbourne	12%	61%
Sydney	26%	110%

The following figures use ACCC data where available

Location	Residential Change	Industrial Change
Adelaide	13%	100%
Melbourne	12%	62%
Sydney	19%	96%

The following figures use published pipeline tariffs and multi asset discounts provided by APA

Location	Residential Change	Industrial Change
Adelaide	16%	110%
Melbourne	15%	75%
Sydney	19%	96%

Results – sensitivities



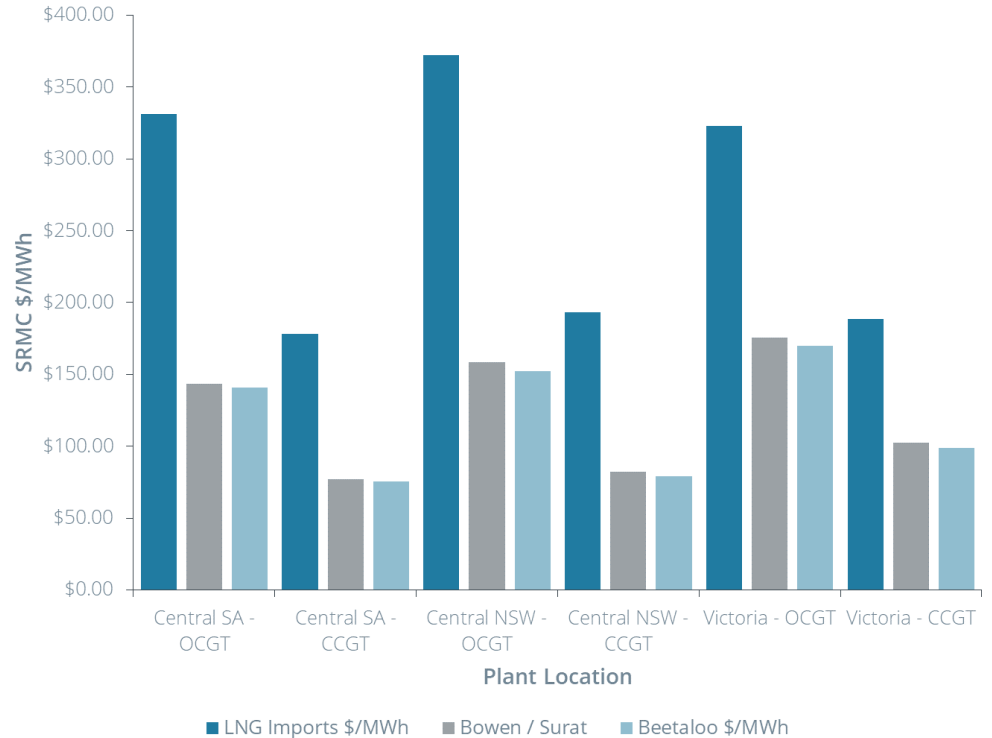
05

GPG SRMC Under Different Supply Scenarios



The short run marginal cost of running different generators under different supply scenarios is calculated using data from AEMO's IASR assumptions for heat rate and running costs, partnered with our delivered gas price under three supply scenarios.

Both domestic supply options decrease SRMC in every location. With Beetaloo supply being the cheapest when assuming the construction of a new pipeline.



Appendix – Price Assumptions



Retailer and distribution charges



Retail charges have been factored into both residential and industrial bills, whilst distribution charges are only in effect for residential customers. These bill components remain constant across the different scenarios.

For **Industrial** customers, the retail charge was taken as 5% of the total bill.

For **residential** customers 2017 estimates of bill components were taken and scaled into 2024 dollars. Whilst distribution charges have been estimated from the currently published tariffs available from GDB's in each major city. The contribution of both retail and distribution charges to residential customers bills and detailed in the table below.

	Distribution Charge (\$/GJ)	Retail Charge (\$/GJ)
Sydney	\$15.53	\$10.40
Melbourne	\$8.12	\$7.18
Adelaide	\$32.75	\$10.89

Commodity cost assumptions – domestic gas



For domestic gas we used 2C reserves extraction cost data from the 2023 GSOO, seen in the table below. We used the Beetaloo and Bowen/Surat figures within the analysis.

Basin	2P	2C
Amadeus	\$ -	\$ 6.50
Bass	\$ 8.01	\$ 10.61
Bonaparte	\$ 5.00	\$ 6.23
Bowen/Surat	\$ 4.75	\$ 7.28
Clarence-Moreton	\$ -	\$ 6.02
Cooper/Eromanga	\$ 8.41	\$ 10.25
Galilee-Drummond	\$ -	\$ 6.38
Beetaloo/Georgina	\$ -	\$ 5.35
Gippsland	\$ 6.68	\$ 8.08
Otway	\$ 5.53	\$ 8.78
Sydney (Camden)	\$ -	\$ 7.67

Commodity cost assumptions – imports

For imported LNG costs we assumed there were three primary components. International LNG cost, shipping cost, and regassification costs which we summed to find our imported LNG price.

We tested with two different LNG prices, using brent futures derived from the ACCC netback price published 20th February 2024, and from the US energy information administration (EIA), and applied a slope of 14.3% to obtain the following. Freight rates assume that gas is being delivered from the international JKM market back to Australia.

Item	2024	2025	2026	2027	2028
ACCC LNG Price (\$/GJ, 2024)	16.58	15.67	15.09	14.73	14.55
EIA LNG Price (\$/GJ, 2024)	20.26	19.06	19.24	19.33	19.46
Freight rates (\$/GJ, 2024)	1.04	1.14	2.09	1.95	1.65

The estimate for regassification was calculated by estimating terminal construction and operation costs, and determining how much they should charge to recover their costs over 30 years.

We found a regassification terminal will charge **\$1.46/GJ** (\$2024) assuming:

- Capital costs of \$250 million for port infrastructure, and \$500 million to acquire an FRSU (as in port Kembla) with 3% opex and 5% returns
- 60PJ per annum of imported LNG, reflective of the largest east coast gas shortage from the 2023 GSOO (~120 PJ), split across two LNG import terminals.

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