Gas Market Update

September 2023

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LIGHT THE WAY

2022 <> 2023 : Back to back Outliers

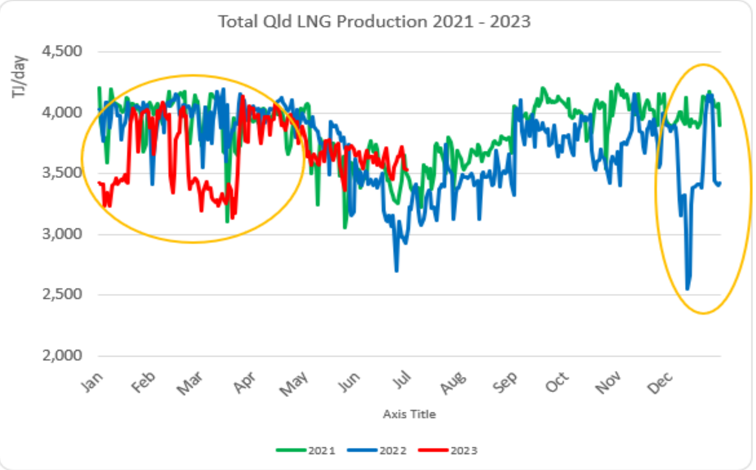
- H1 2023 produced an abrupt turn around after a challenging 2022. December 2022 initiated change with softer domestic and international conditions carried into the new year.
- High supply rates, a mild summer with high renewable generation and economic pressures have put the brakes on the gas sector.
- Q1 was Australia's highest LNG production and export quarter but this was driven entirely by west coast projects, remained strong into Q2.
- Gippsland production slumped 33%. Forced outages at Qld LNG facilities left a glut of gas in east coast markets.

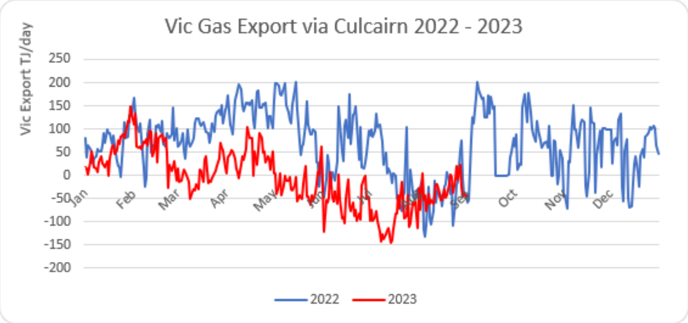
Winter Period June to August	2023	2022	2021	Δ 2023
Retail, Commercial & Industrial (PJ)				
DWGM Total Demand	70.1	76.3	78.0	-8.2%
Sydney Demand	24.3	26.5	23.4	-8.2%
Adelaide Demand	6.0	6.6	6.5	-8.8%
Brisbane Demand	5.0	7.7	8.6	-34.6%
Variance against previous year	-11.7	0.5		
Generation (PJ)				
Vic GPG	6.3	18.5	9.5	-66.1%
Total NEM GPG	27.4	47.9	41.6	-42.8%
Average Price Vic BoD	$ 11.34	$ 30.86	$ 10.75	-63.3%
Average Price STTM Hubs	$ 11.55	$ 32.77	$ 12.02	-64.8%
Lochard UGS Inventory @ 31 August (PJ)	19.1	12.4	11.3	53.9%

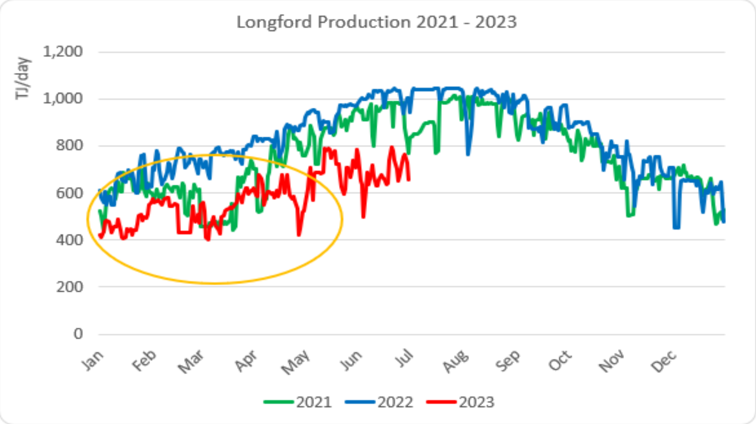
- Forecast peak day shortfalls have not been realised in 2023 on account of low retail and gas powered generation demand, including concerns for NSW demands following the Liddell closure, largely offset by some 1,100MW new renewable capacity.
- Domestic price outcomes in east coast markets across the winter period are a complete contrast to 2022 levels and while offering some respite, have created different challenges for portfolios in managing the downside.
- Global demand gas prices have softened though market and economic forces are stimulating increases in oil and gas prices.

Production and Supply Issues in Queensland and Victoria

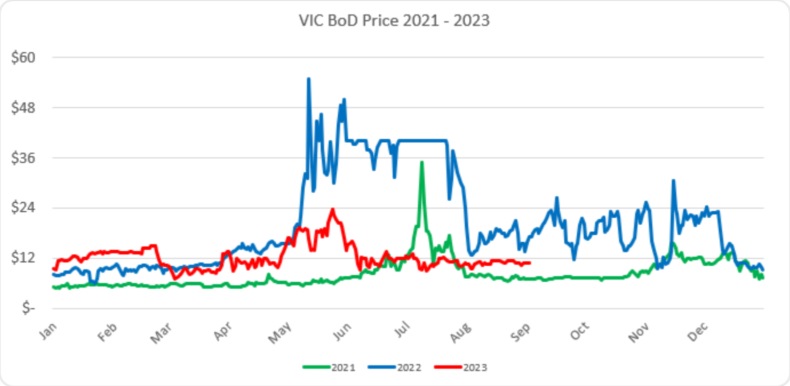
- QCLNG experienced forced outages at their pipeline infrastructure throughout December 2022 to April 2023.
- Noting there are some complexities in analysing production volumes, the production decrease appears in the order of 35-40 PJ over the six month period. Not all gas resurfaces in the East Coast markets but does contribute to the overall supply.
- Longford issued repeated offshore maintenance constraints throughout H1 2023 reducing production significantly. Industry was concerned for plant integrity approaching winter.
- Production issues contributed to changes in the flow of gas between northern and southern markets.

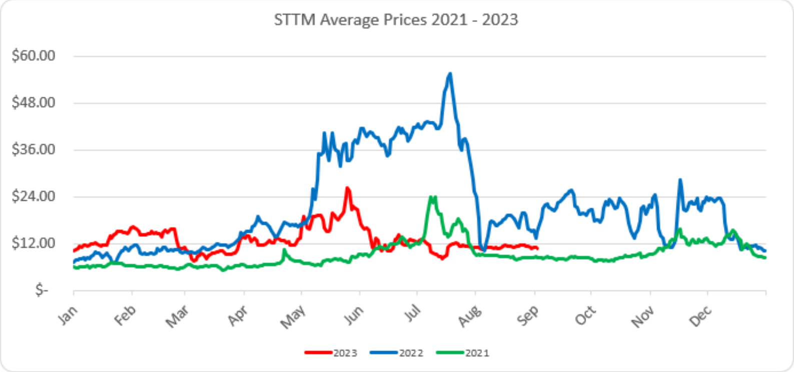






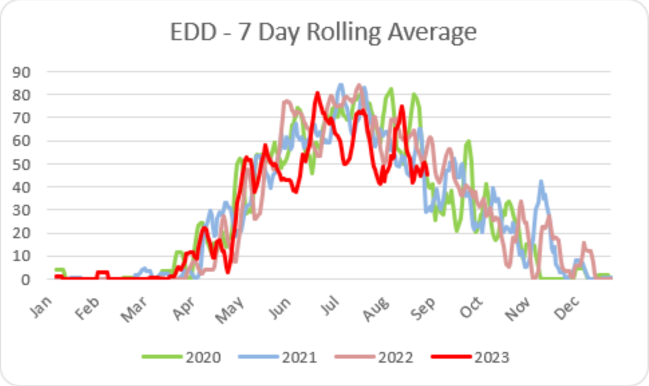
Wholesale market pricing

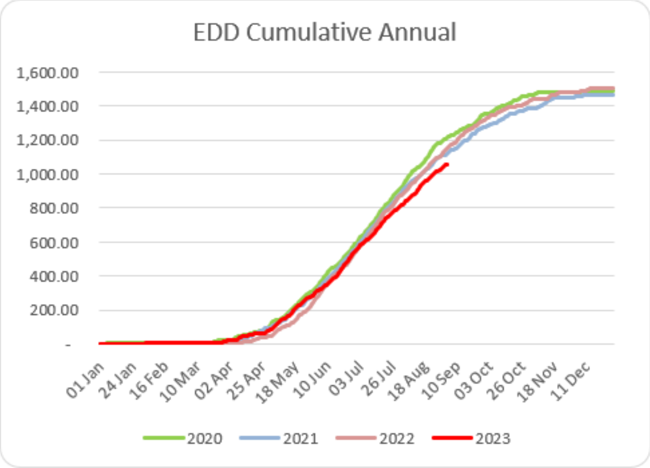


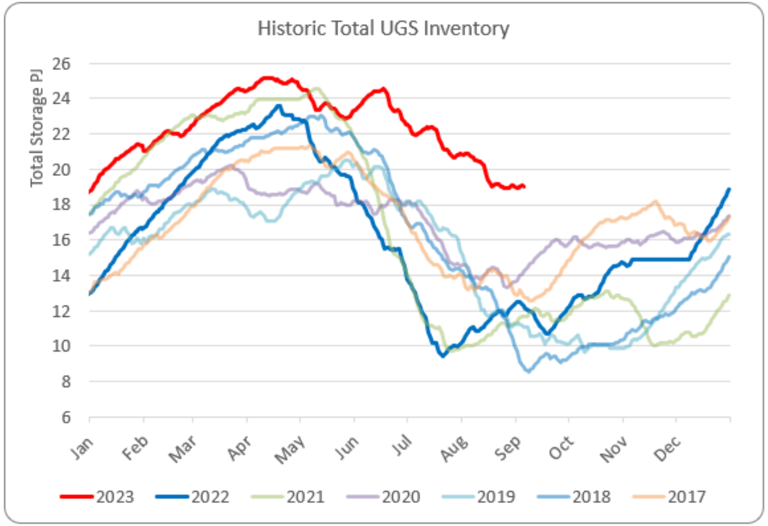


- Prices fell away from the high levels in Q2 2022 through December. As Longford struggled through Q1 2023 prices lifted into mid $13 but fell away in March and averaged $11.50.
- UGS inventory was replenished rapidly.
- May produced cold weather which coincided with restrictions triggering high prices for the month, averaging $19. Expectations grew for another solid ramp into winter demands.
- Transportation constraints on the MSP limited interstate flows and heightened price sensitivity. Longford production increased but not enough to offset the increased demand, particularly Vic.
- The onset in May was sudden and strong, bid stacks showed a clear response to anticipated conditions ahead, Vic price peaked at $24.88, Sydney hub price reached $30.
- Participants anticipated solid conditions for the winter ahead, but not to the extent of 2022 given northern hemisphere had experienced a mild winter, European storage inventories were above 50% in March.
- Trading activity on AEMO's Gas Supply Hub platform was subdued suggesting bilateral forward trades were executed to manage positions. (More on trading and the cap to follow).

Victorian Weather, Lower Demands and High Storage Inventory







- 2023 has seen UGS is at its highest sustained level ever. Low demands resulting in a balance being pushed sideways creating concerns among participants managing inventory while satisfying contractual ToP obligations.
- Stark contrast to 2022 levels requiring AEMO intervention.
- While demand is clearly correlated to EDD there is suspicion customer behaviour is changing, likely related to Tariff increases, cost of living pressures and the dawn of electrification.

Average Victorian Demand (TJ/day)

EDD Range	2023	2022
Chilly (6-8)	708	732
Cold (9-10)	817	846
Very Cold (11-14)	944	932

Impact of the Price Cap

- On 23 December last year, the Competition and Consumer (Gas Market Emergency Price) Order 2022 came into effect for 12 months. The Order introduces a price cap on gas of $12 per GJ (and does not apply in Western Australia).
  Generally the order applies to Gas Producers and affiliates (related entities) of gas producers.

- Exemptions:
  - gas to be exported as LNG,
  - retailers that meet certain criteria,
  - *trades* on the Short Term Trading Markets (STTMs) or Declared Wholesale Gas Market (DWGM),
  - near-term (next 3 day) trades and offers on the Gas Supply Hub Exchange)
  - Separate Ministerial exemptions, delegated to the ACCC

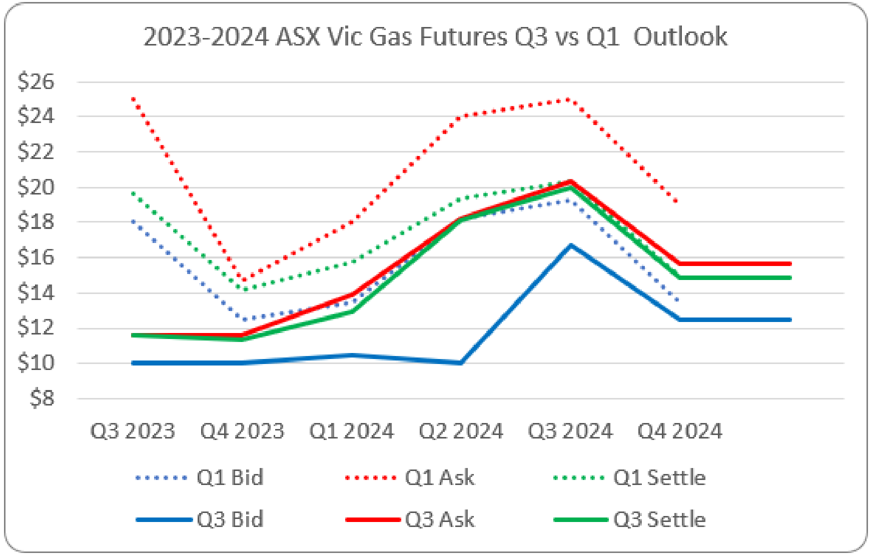
- Because Short Term Trading Markets and the Declared Wholesale Gas Market are exempt. The $12 per GJ price cap is able to exert downward pressure on commodity prices directly through:
  - bilateral sales of any length from non-exempt participants
  - longer-term trade by non-exempt participants on the Gas Supply Hub.

- Trading activity was stifled during Q1 as participants made haste to understand the T&Cs (and penalties) associated with the cap.
  In Q2 traded volume increased and was made up mostly by near term trades, through the markets, implying sellers took financial advantage of short term trades, for example through May when prices kicked into the $20s.

- The cap has highlighted complexities, constraints and cost in the East Coast gas transmission networks. It influences premiums /price spreads in swap transactions.

- The next phase of the Price Cap and Code of Conduct applies to the period through to June 2025 is due September 11.

Forward Price Outlook



	BID	ASK	Settle
CAL 2024 @ Q1	$ 16.00	$21.75	$ 17.60
CAL 2024 @ Q3			**$ 16.47**
CAL 2025 @ Q1	$ 16.00	$22.50	$ 22.07
CAL 2025 @ Q3			**$ 18.58**

- Despite relatively low liquidity the ASX AU Gas Futures index continues to provide short and medium term forward pricing guidance.
- Prices for Q3 2023 onwards have dropped significantly since Q1.
- ICAP Gas Brokers Forward Price Curve continues to serve as a robust waypoint for forward trading commodity and cash settled derivatives.
- Other guidance includes Brent ICE current and forward pricing as well as JKM and the ACCC Netback series.
- The East Coast Gas Market Price Cap had a direct impact on trading activity initially though is lifting as traders and producers alike have become accustomed to the new suite of rules.
- Gas Market Reforms have been introduced to capture trade activity.

Gas Market Reforms - Price Transparency

- Gas Market Reforms have seen the introduction of compulsory reporting under the National Gas Rules (NGR) with a view to improve transparency of bilateral gas trading.

- Reporting obligations apply to all trades outside the AEMO operated markets and Gas Supply Hub platform, and derivatives. Trade Data is published on AEMO's Gas Bulletin Board weekly.

- Prices of individual trades for delivery over Q3 and Q4 2023 varied between $13.1 per GJ and $15.2 per GJ (Table 2). This suggests price expectations over the remainder of 2023 in line with the range of trades observed over Q2 2023.

Table 2 Forward pricing for short term supply transactions

Period	VWA ($ per GJ)	Range ($ per GJ)	Delivered quantity (PJ)
Q2 2023	13.8	11.5 – 16.2	10.7
Q3 2023	14.7	13.1 – 15.3	7.5
Q4 2023	13.9	13.2 – 14.2	9.6
2024	17.5	16.2 – 19.1	13.1
2025-2027	17.7	16.9 – 18	4.6

Note: The above prices and quantities are based on the actual delivered dates of the reported transactions and include all reported supply transactions and pricing structures. The VWA price range is the minimum and maximum price accounting for all transactions on specific days of trade within that period.
Source: AER analysis using Natural Gas Services Bulletin Board data.

- Looking forward at reported transactions into 2024 and as far out as 2027, prices have been reported closer to $18 per GJ, materially above current levels. This could suggest market expectations of enduring upward price pressures. It may also indicate that buyers have been willing to pay a premium to secure longer-term gas.

- For context participants reported to the Bulletin Board supply transactions totalling 47 PJ compared to only 12.4 PJ traded through the GSH, indicating clearly most forward trade takes place bilaterally. Time and location swap activity between WAL and VIC has been high.

- Estimates of the trade balance 60% Gentailer, 20% Large Industrial, 13% Retailer with the balance between traders and producers.

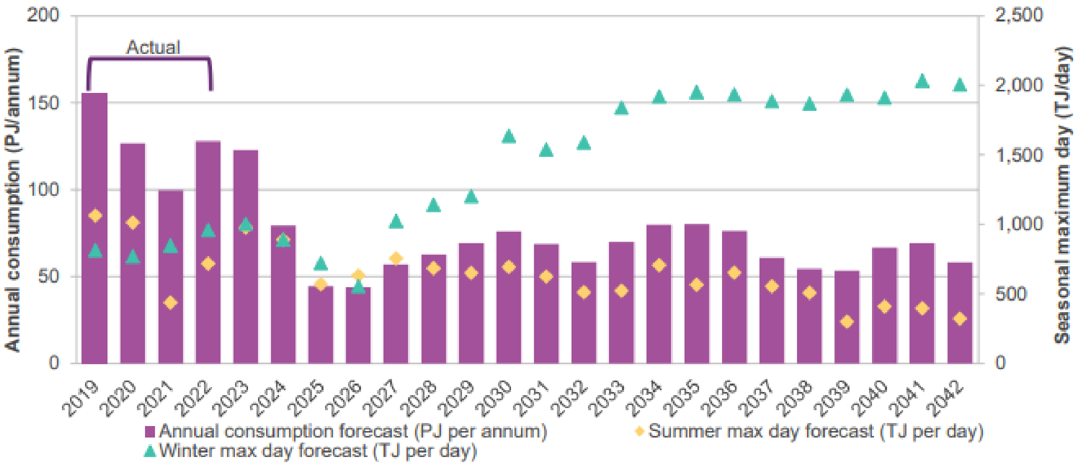
Wholesale markets quarterly Q2 2023_0.pdf (aer.gov.au)

Gas Demand and Supply Outlook

- GPG is forecast to decline over the outlook period though annual consumption varies.

- Gas is, however, still expected to play a critical role in firming.

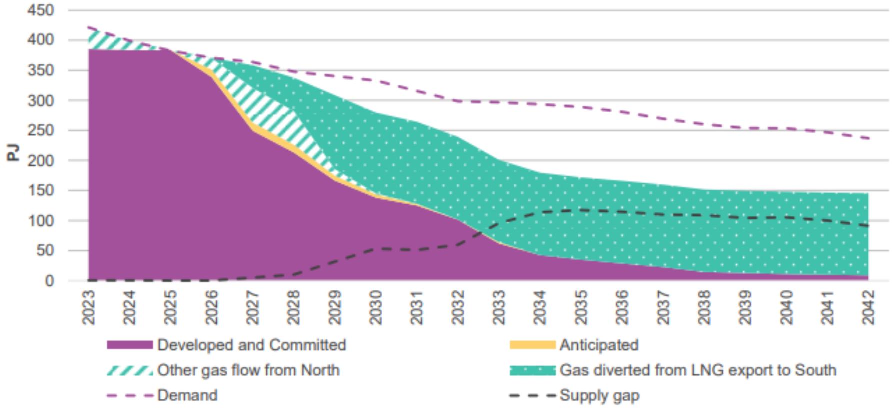
Figure 2 Actual and forecast NEM gas generation annual consumption (PJ/y) and seasonal maximum daily demand (TJ/d), *Orchestrated Step Change (1.8°C)* scenario, 2019-42



- Continued growth in PV and Wind will offset GPG requirements in the short term. No new gas connections in Victoria?
- The medium and longer term sees through the retirement of the coal fleet
- Gas is seen to continue to provide firming to VRE and complement storage (batteries, pumped hydro)

- Summer loads are flat with slight long term decline.
- The winter peaks are forecast to grow due to electrification of heating loads and lower VRE, almost doubling across the outlook period.
- Given winter gas demand is naturally high managing the rising coincidence of gas and electricity peak demands becomes a greater challenge without appropriate new flexible and firm capacity.

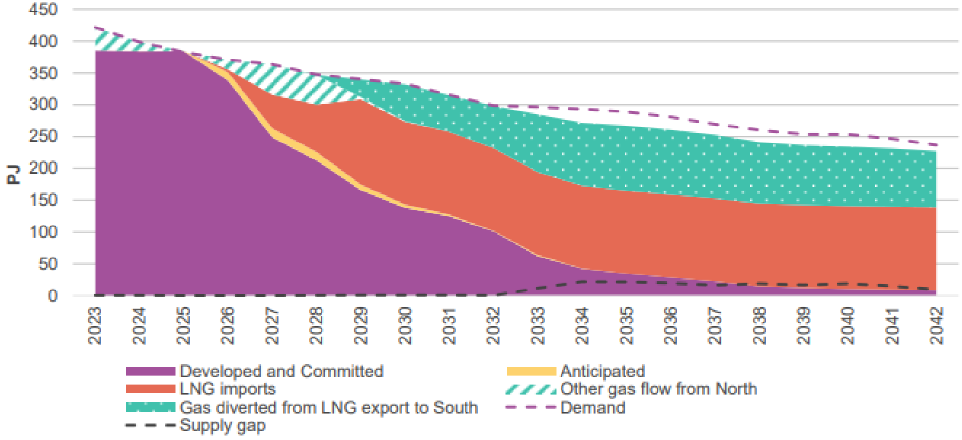
Figure 46 Projected annual adequacy in southern regions *Orchestrated Step Change (1.8°C)* scenario, with existing, committed and anticipated developments, 2023-42 (PJ)



- New supply is needed to meet southern demand from 2027 across the horizon. The forecast supply gap is reported to be between 0-12 PJ depending on weather conditions.
- Increasing gas supply otherwise contracted for LNG export is required to be diverted to domestic consumers from 2027 to maintain domestic supply adequacy (breaking contracts, causing LNG supply shortages).
- From 2030, all supply from the north to the south is from the LNG exporters. Development of new supply options would reduce the level of LNG supply shortage,
- The domestic market requires more gas from the LNG exporters than their production surplus

- 2023 GSOO has no assumptions for LNG Terminals meeting “committed” or “anticipated” status. Figure 49 assumes PKET exists and illustrates a terminal can satisfy the energy shortfall and may delay supply gaps until 2033, approx. 20PJ/year across the forecast horizon.
- This supplements the ‘other gas from North’, though the very significant issue remains - the terminal provides a means to receipt molecules but the south needs to secure the LNG supply as well.

Figure 49 Projected annual adequacy in southern regions *Orchestrated Step Change (1.8°C)* scenario, with existing, committed and anticipated developments, and PKET, 2023-42 (PJ)



Supply outlook

- The punchline in the 2023 GSOO is clear. Shortfalls are looming and the East Coast needs a balancing solution.
  AEMO has been forecasting shortfalls since 2019, to be fair missed the mark by one year (2022) weather the saving grace in 2023.

Challenges for future contracting:

- Declining supply and ageing assets
- Barriers to access firm transport, risk around non firm supply
- Increasing fixed costs and Financing
- AMSC, EPBC
- Socio-political conscience – fossil fuels and title
- Impact of the price cap.

- Developments in Green Gas

Import Terminals:

- Viva (Geelong Refinery) working through maritime environment, noise and air quality and Aboriginal Cultural Heritage matters
- Vopak (Port Philip) working through environmental issues, promoting a small and easily removed, short term footprint
- Venice (SA) aim to make FID and import from 2026 but seeks sophisticated customer to source LNG for tolling perhaps as an alternative to typical firm contracts. Very dependent on success of Vic terminals.
- PKET is progressing with Jemena and Squadron very busy on the ground
- One large Longford producer considering using existing assets and tolling LNG through a terminal.

While we are committed to supporting the needs of the market EnergyAustralia faces challenges maintaining competitiveness.

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