DRAFT GAS PRICE PROJECTION UPDATE for 2023 - 2053

Richard Lewis

Director, Lewis Grey Advisory

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Study Objective

- Projection of gas prices in the Eastern Australian natural gas market (NSW, VIC, QLD, SA and TAS) over the period 2023-2053.
  - Takes into account exports from Gladstone and potential imports
  - Excludes supply of bio-gases and Hydrogen
- Gas market prices are largely determined by contract negotiation between producers and buyers – questions about level of contracting at high prices
- Projections focus on delivered average contract prices (including transmission costs) applicable to Large Industrial Consumers, with high load factors
  - Residential and Commercial (R&C) prices excluding retail and distribution = Industrial + Load Factor Adjustment (Pipeline & Storage)
  - Gas Powered Generation prices = Load Factor + Site specific adjustments
    - Load factor based on GPG winter peak usage
- All gas price estimate charts are Industrial unless labelled otherwise

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Gas Market Changes since 2021

- Global LNG prices surged in response to Russia's invasion of Ukraine, reductions in Russian gas supply to Europe and European gas buyers' scramble to secure alternate supplies, mainly LNG. Australian LNG exporters responded to high global prices by increasing spot export sales, offering short-term domestic (east coast) sales at high, export equivalent, prices.
- During winter 2022 reduced coal plant output and high gas demand for power generation led to supply/price crises in both electricity and gas markets. On June 15 AEMO suspended the NEM for nine days to ensure reliable supply. The Gas Supply Guarantee was also triggered to ensure gas supply for power generation. In the Victorian Gas Market persistently high prices led to the Administered Price Cap of $40/GJ being triggered.

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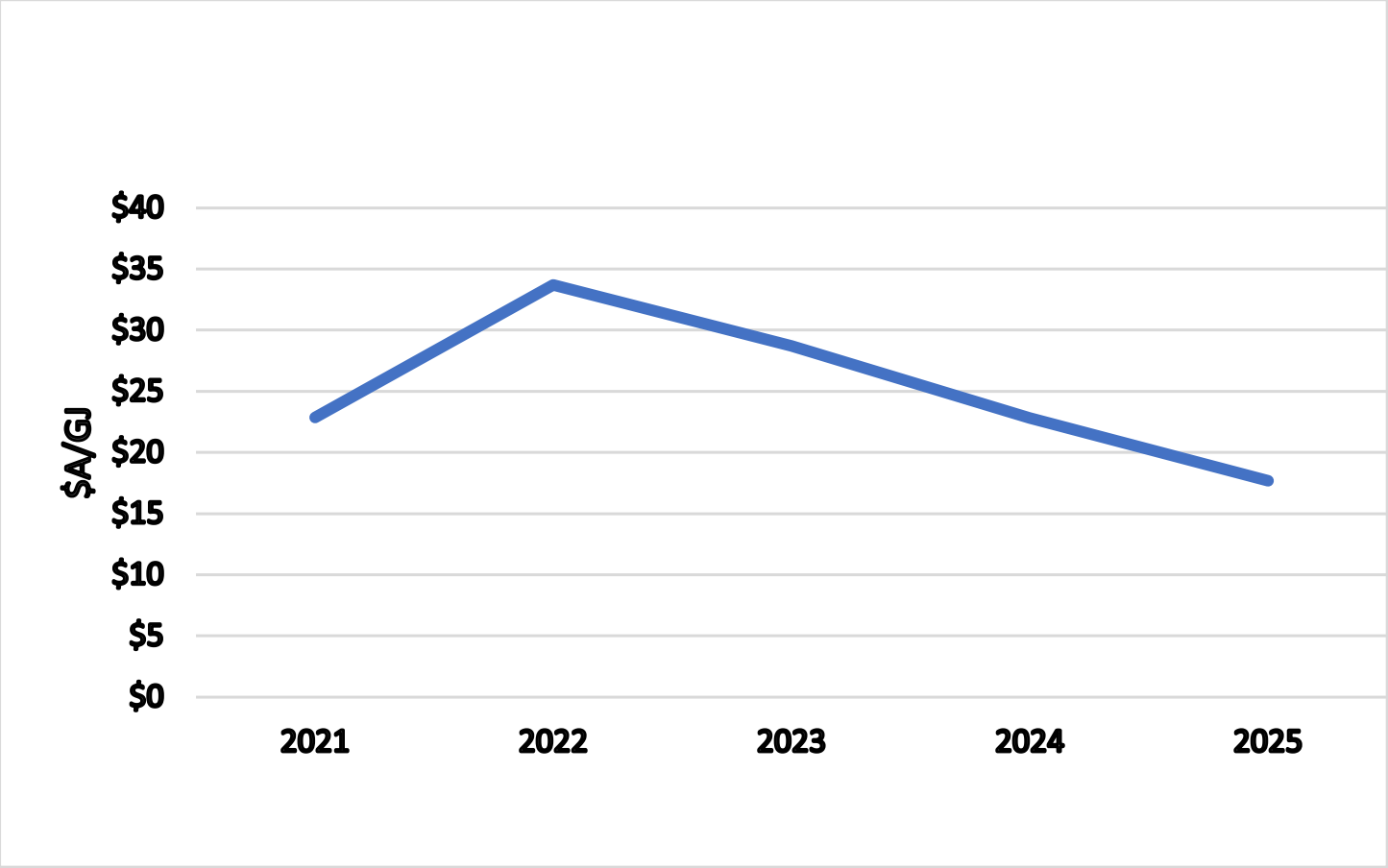
The Situation - International Energy Agency Asian LNG Futures (July 2022)



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METHODOLOGY

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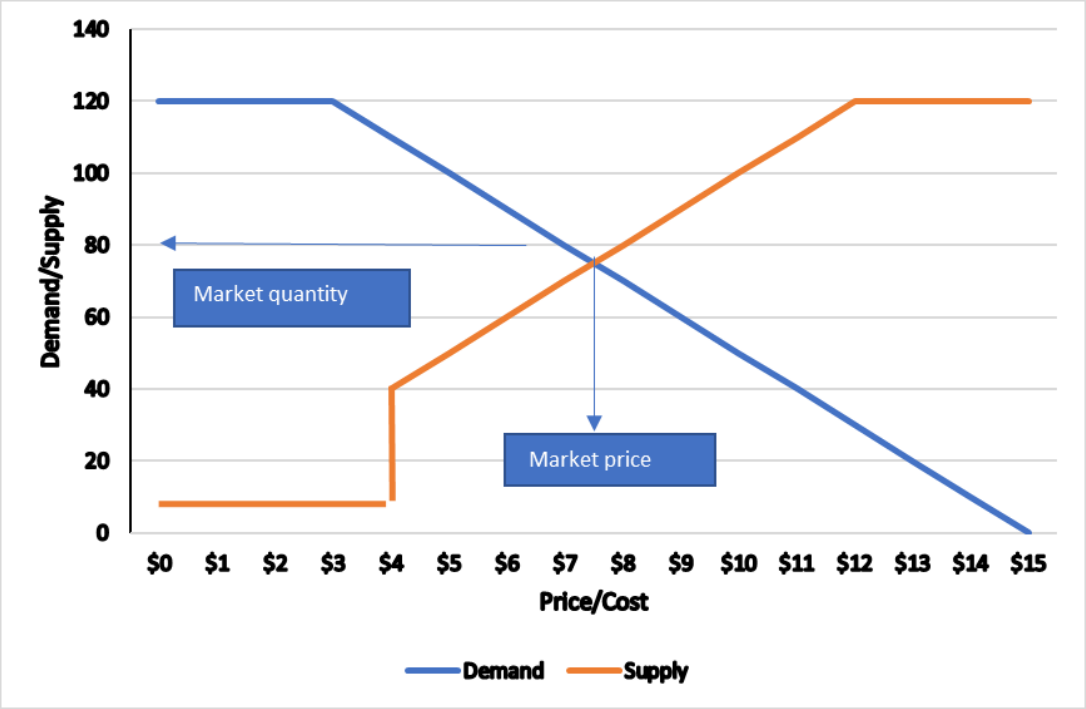
Prices are set by a Demand-Supply Balance

- In most markets demand declines with price and supply increases
- Study model assumes suppliers try to maximise price subject to competition and consumer price resistance
- Outcomes equivalent to Least-Cost supply plus a margin due to market power



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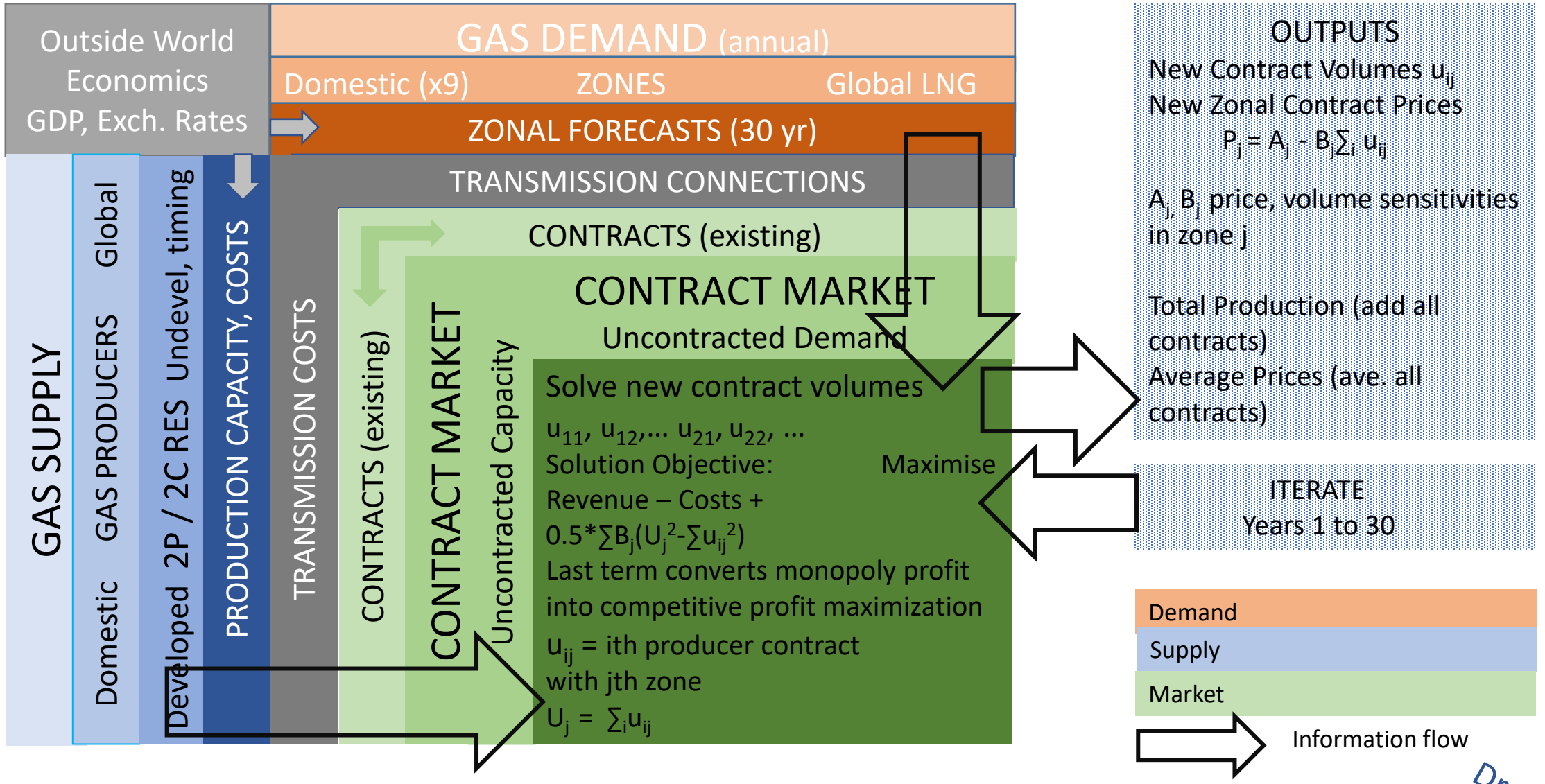
Gas Market Model Schematic



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Inputs & Outputs

- INPUTS
  - Costs (Production & Transmission)
  - Reserves, Resources & Derived Production Capacity
  - Number of Producers
  - Pre-existing Contracts
  - Demand Projections
  - Price Elasticities
  - Exchange Rates
  - Oil Prices
- OUTPUTS
  - New Contract Volumes
  - New Contract Prices
  - Total Volume Supplied
  - Average Contract Prices
  - Price Adjusted Demand (Total Demand = Total Supply)

Methodology Details

- Prices are set in New Contracts market, with existing contracts input
- New Contract Demand = Gap between FC demand and contracts entered up to previous year
- Supply = Uncontracted capacity, based on reserves, timing
- Supply Cost = 2P undeveloped or 2C if need to be developed
- 10 Demand zones (QLD=5)
- LNG market represented – Qld competes with external suppliers
- Oil indexation – reduced linkage likely in lower LNG price scenarios

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Ex-Post Factors

Industrial Gas Price Forecasts from Gas Market Model

- Apply Oil Price Index

Apply Oil Price Indexation weights

- Final Industrial is a weighted blend of indexed and unindexed
- Different indexation values are applied for North and South regions.
- Level of indexation falls over time.

Adjust gas price forecasts for R&C and GPG sectors

- Prices are further adjusted to reflect different gas usage profiles.

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Model Improvements since 2021

- Gas production costs* for undeveloped 2P reserves and for 2C resources are indexed to foreign exchange rates
- The number of sellers per joint venture can be specified differently for domestic and export markets. This structure was suggested by the ACCC in its July 2022 Gas Inquiry Interim Report

* Rystad Gas Production Cost data, Sep22

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Assumptions Common to all Scenarios

- Transmission costs – current prices are used in all scenarios, escalated by the inverse of aggregate demand
- Initial contracts – current estimates are used in all scenarios
- Oil Indexation is applied only to initial contracts as the modelled prices fully reflect global prices.

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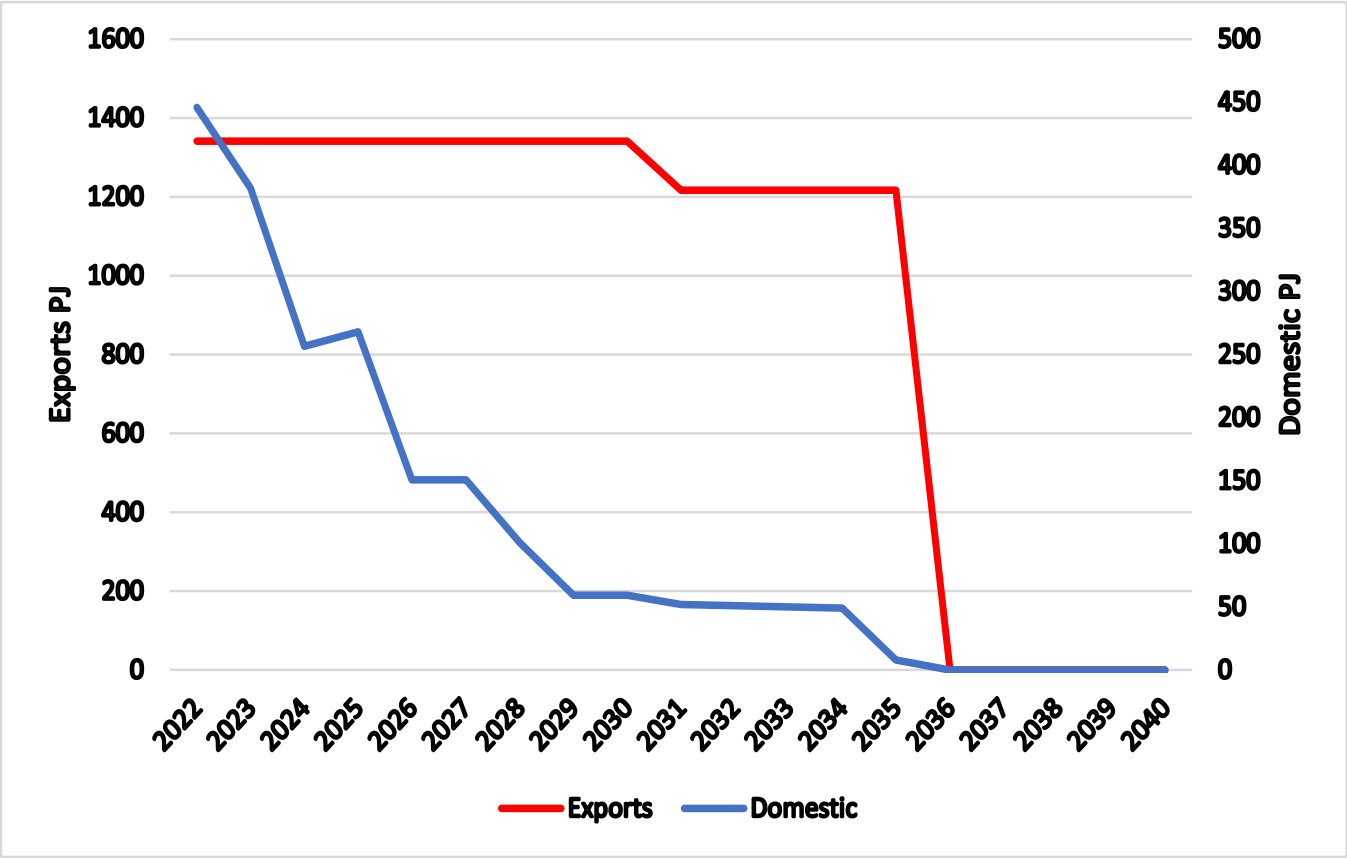
Initial Gas Contracts



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Assumptions Varied Across Scenarios

- Production costs are fixed in United States dollars i.e. in Australian dollars production costs vary in line with $US/$A exchange rates*. There is variation between producers, between 2P reserves and 2C resources for each producer and between Scenarios
- Domestic Gas demand – AEMO's 2022 GSOO projections are used
  - 23 Step Change = 22 Step Change
  - 23 Progressive Change = 22 Progressive Change
  - 23 Hydrogen Export = 22 Hydrogen Superpower
  - 23 Exploring Alternatives = 22 Progressive Change
- Global LNG demand – profiles compatible with domestic profiles have been selected

* Utilising BIS OE supplied scenario specific exchange rate forecasts, Aug22

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Scenario Specific Assumptions

Scenario	Resource Development	Production Costs	LGA's Oil Price Projections
Progressive Change	Only Gas Resources in Fields Already Developed + Approved for Development	High	High
Step Change	All Resources in Developed Basins	Medium	Medium
Hydrogen Exports	All Resources in Developed Basins	Medium	Low
Exploring Alternatives	All Resources in Developed Basins + Gunnedah (2026)	Low	Medium

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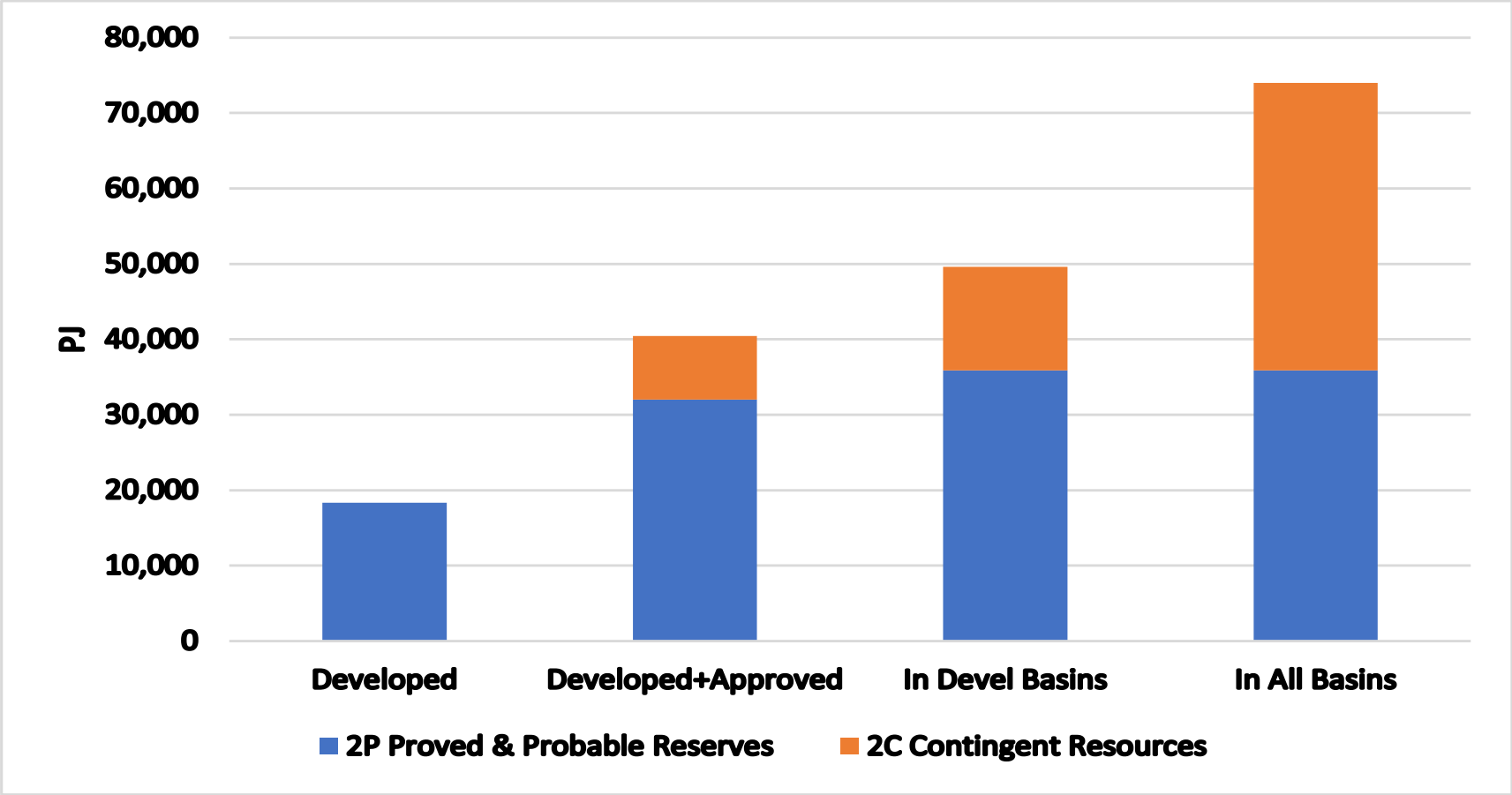
A Comparison of Domestic Gas Resource



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OUTPUTS

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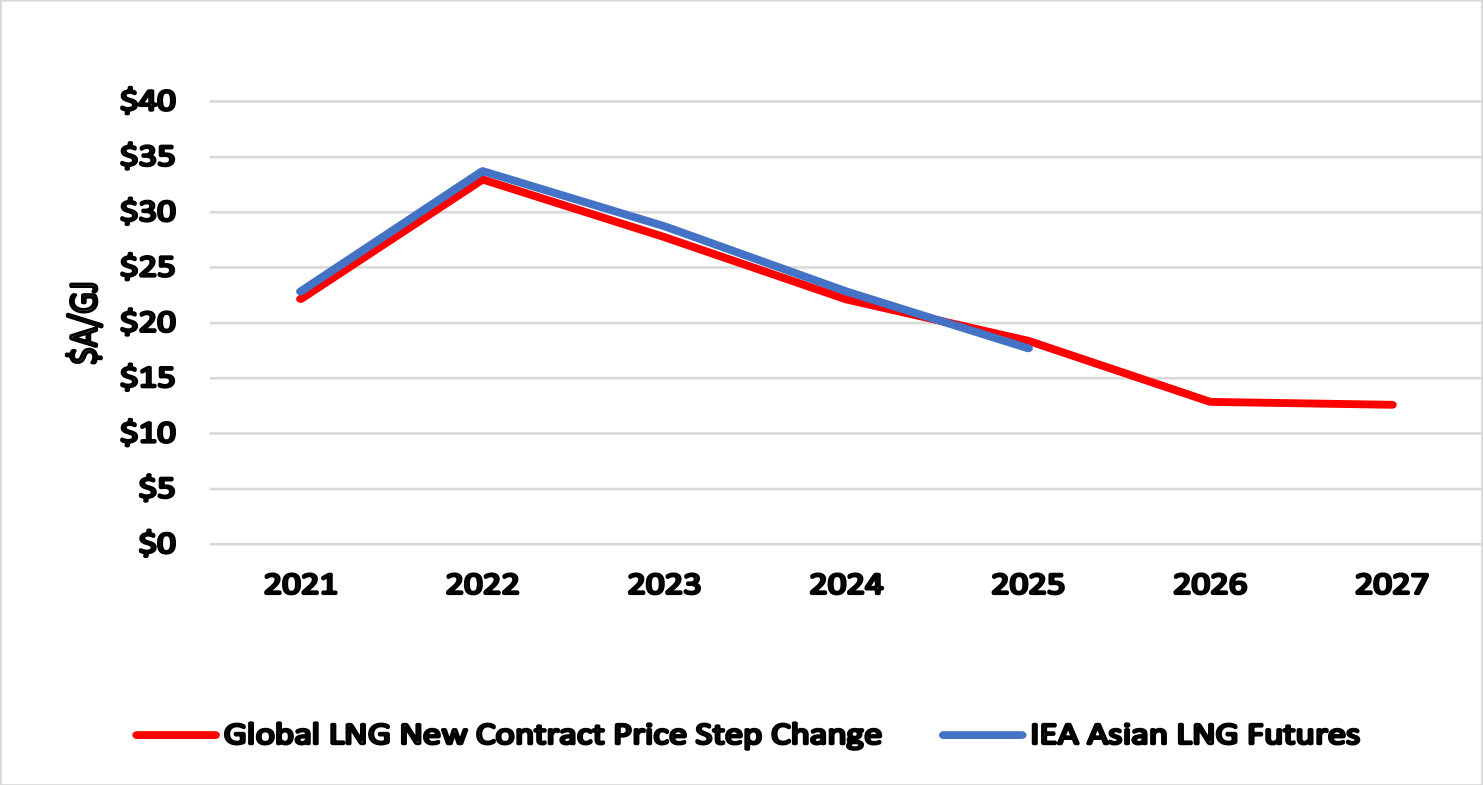
Short-Term Outlook
LNG New Contract Prices in Model Replicate Asian Futures Prices



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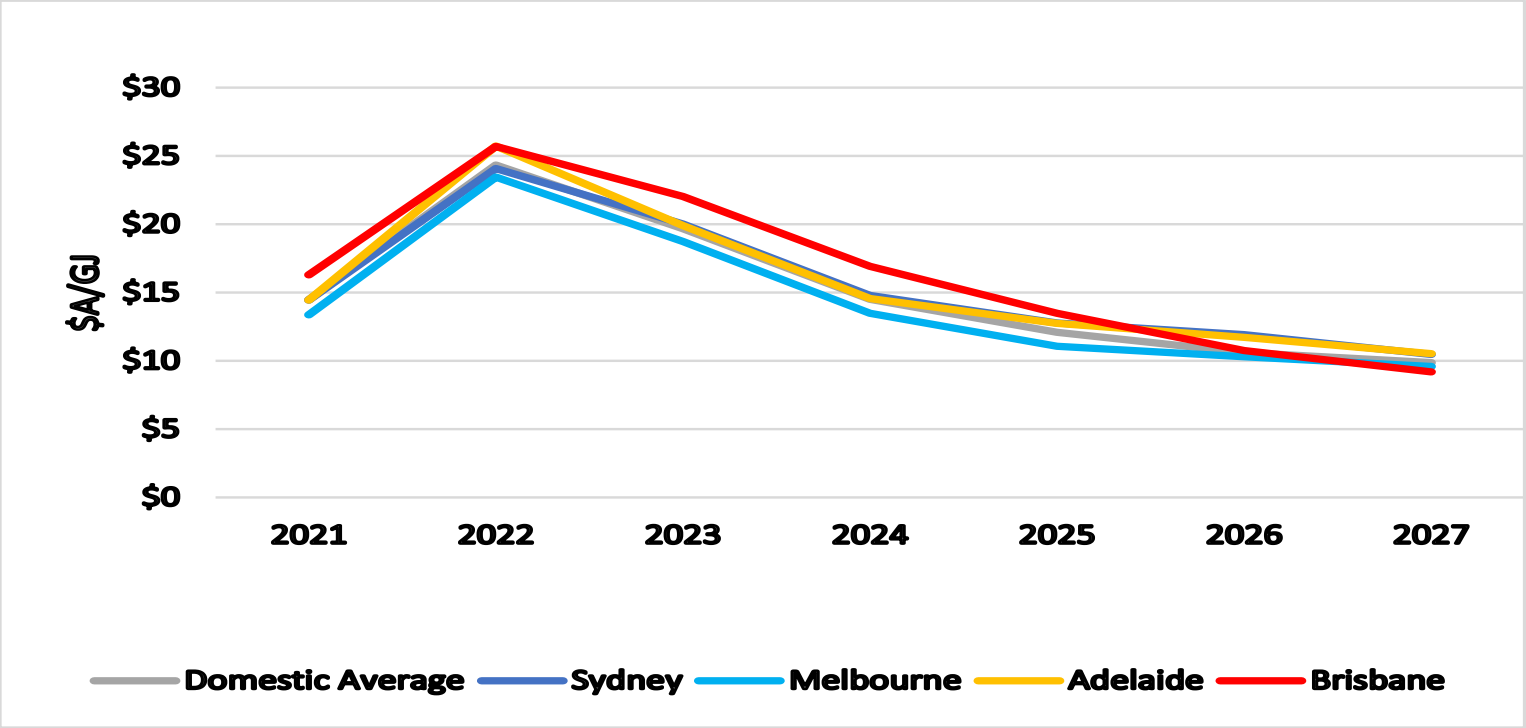
Short-Term Outlook
Domestic New Contract Prices Track LNG New Contract Prices



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Short-Term Outlook

- New Contract prices look like LNG Netback
- But the details also depends upon relative price elasticities.
- Modelling assumes that Domestic market is more elastic than LNG
- If not, Domestic prices would be higher

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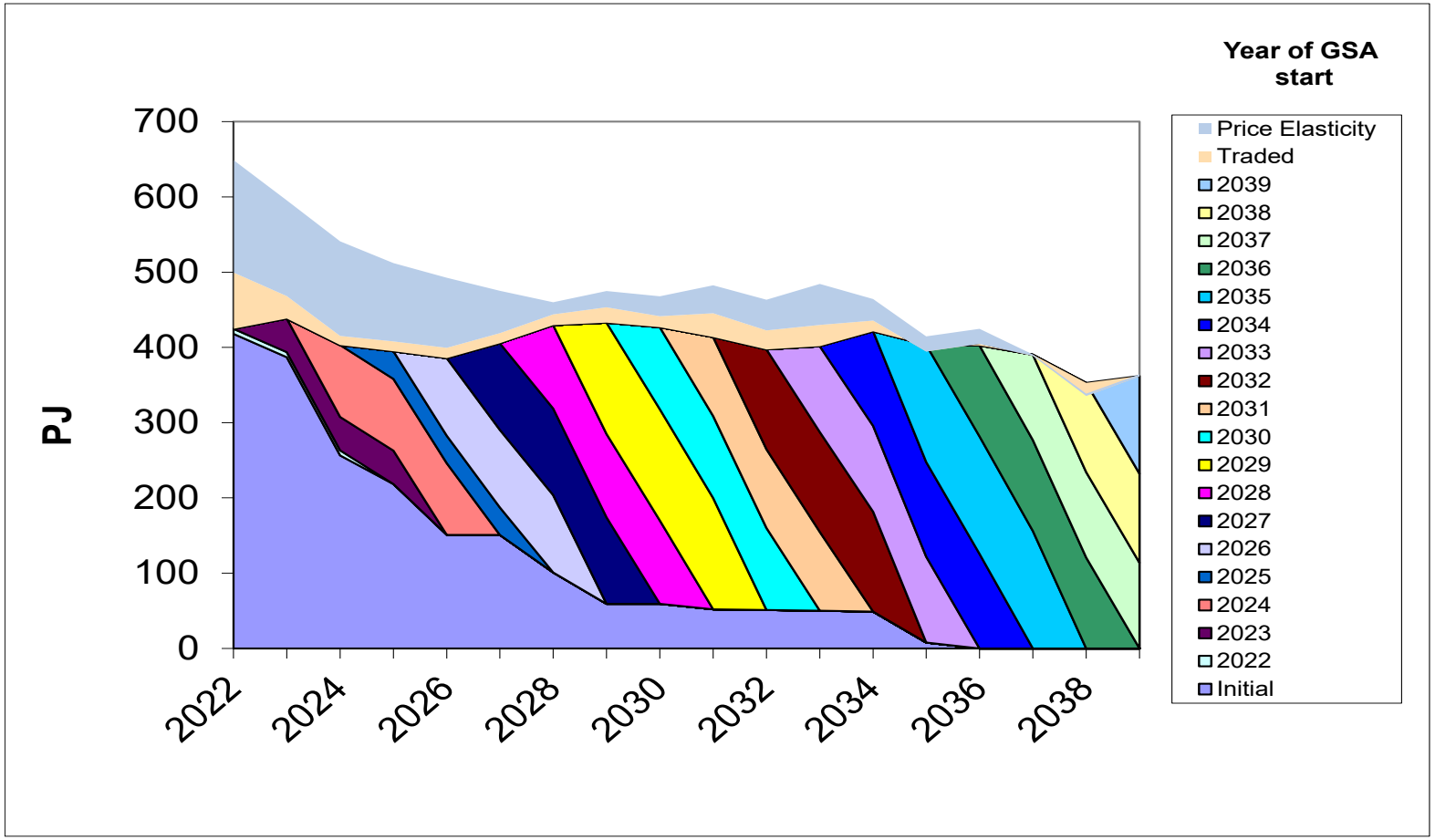
The Big Question Is, At High Prices How Much New Gas is Contracted?



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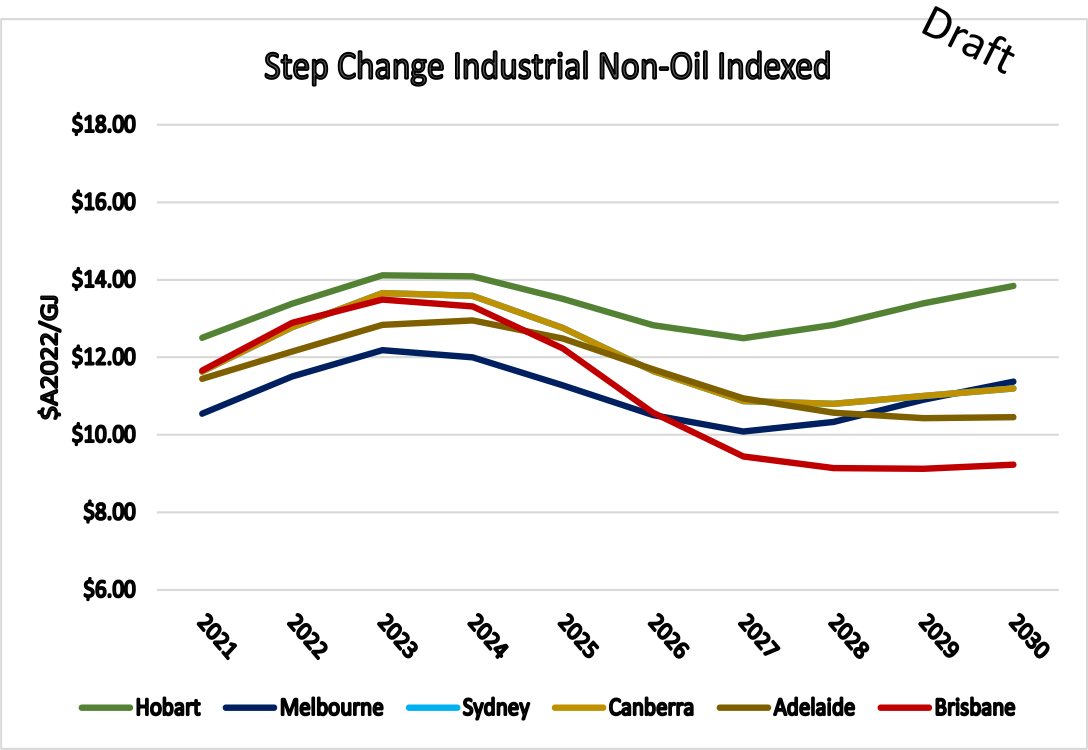
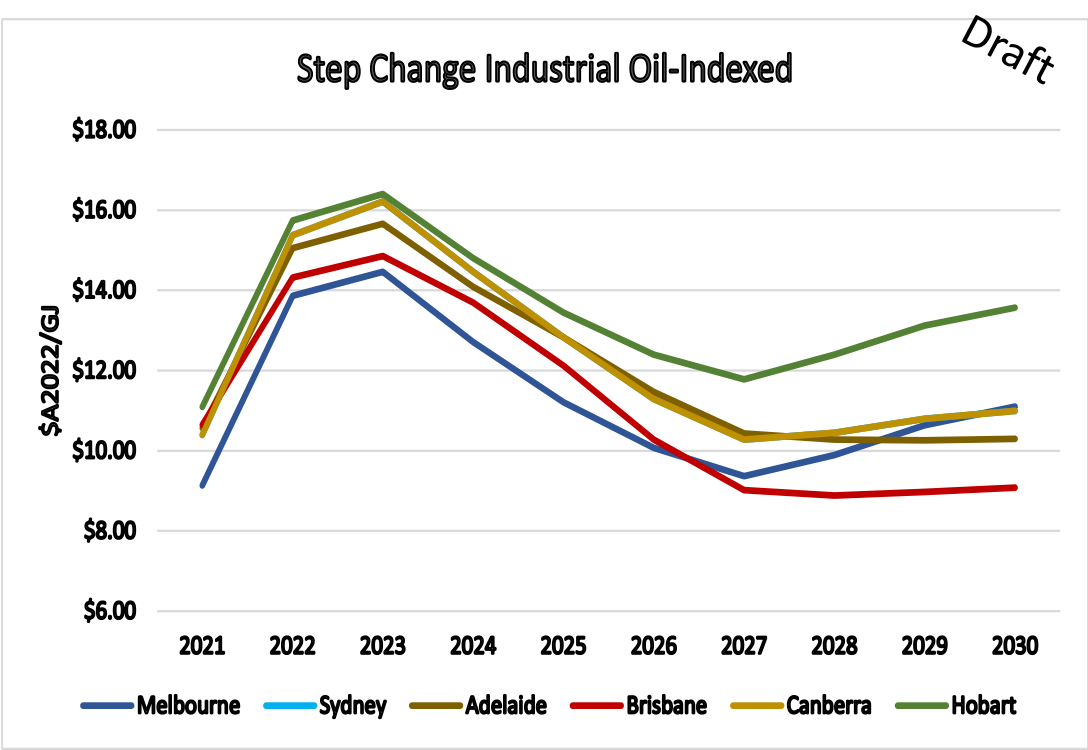
Average Prices Rise Less Dramatically





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Long-Term Projections

- Long-Term projections assume the resumption of normal service by 2027
- In both LNG and Domestic markets, supply is developed after contracting in advance of requirements
- There are numerous LNG projects globally, at various stages of development

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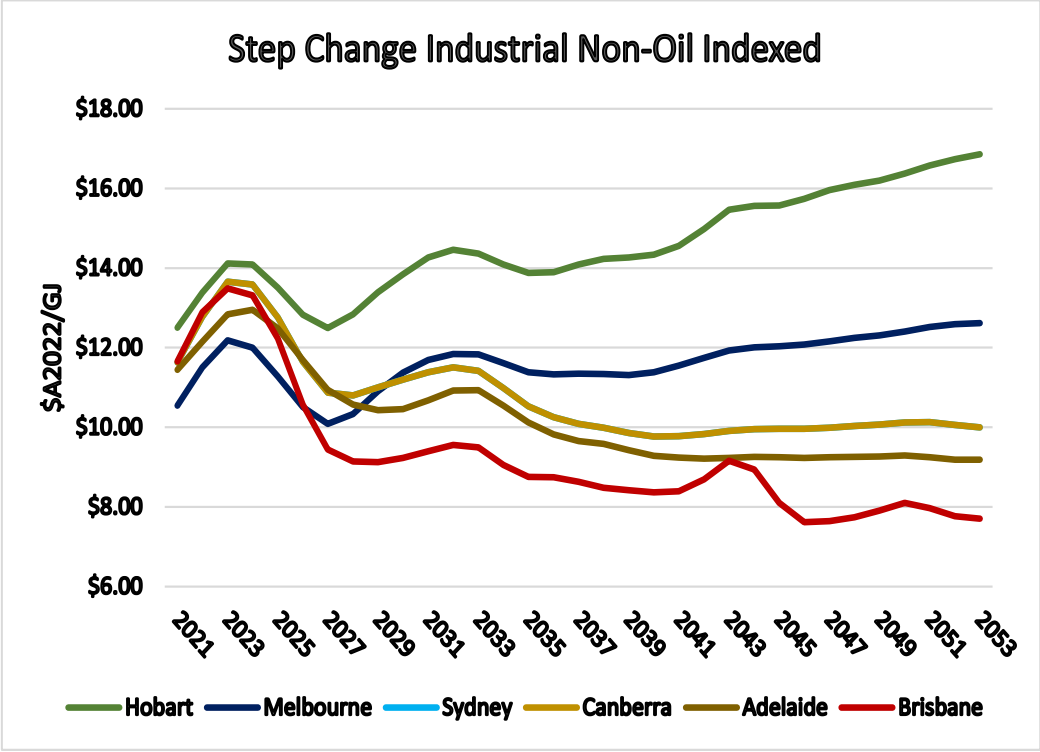
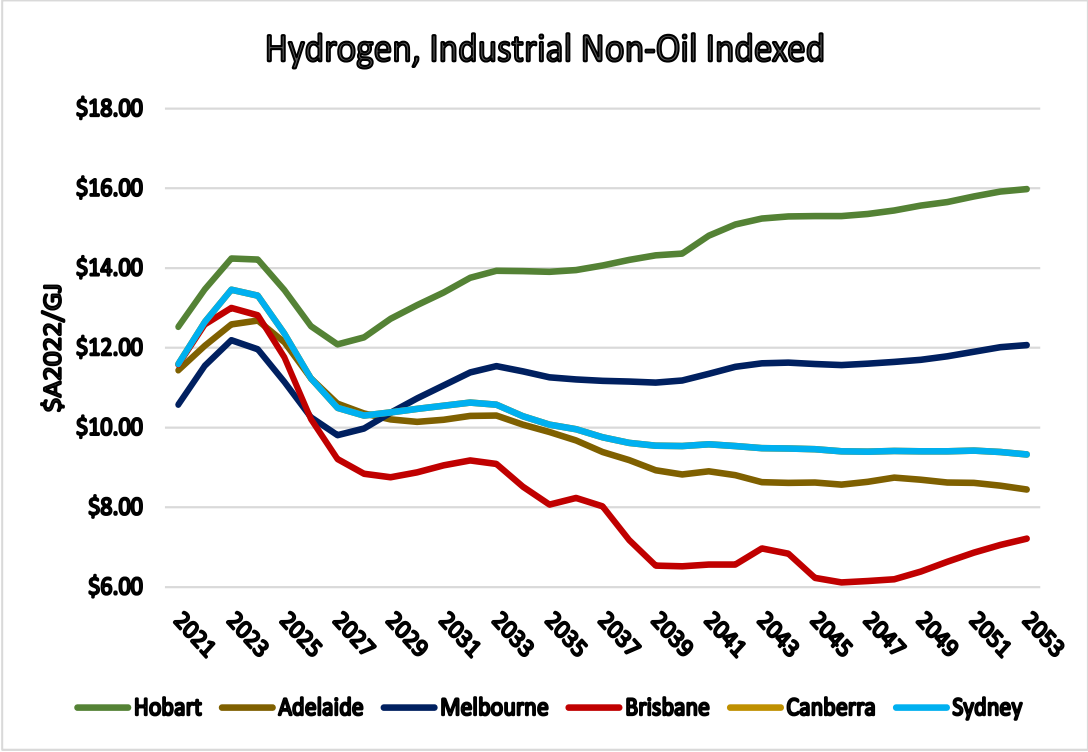
In Step Change, prices rise in Hobart, fall in Brisbane and are steady elsewhere. In Hydrogen, prices are slightly lower, owing to lower exchange rates





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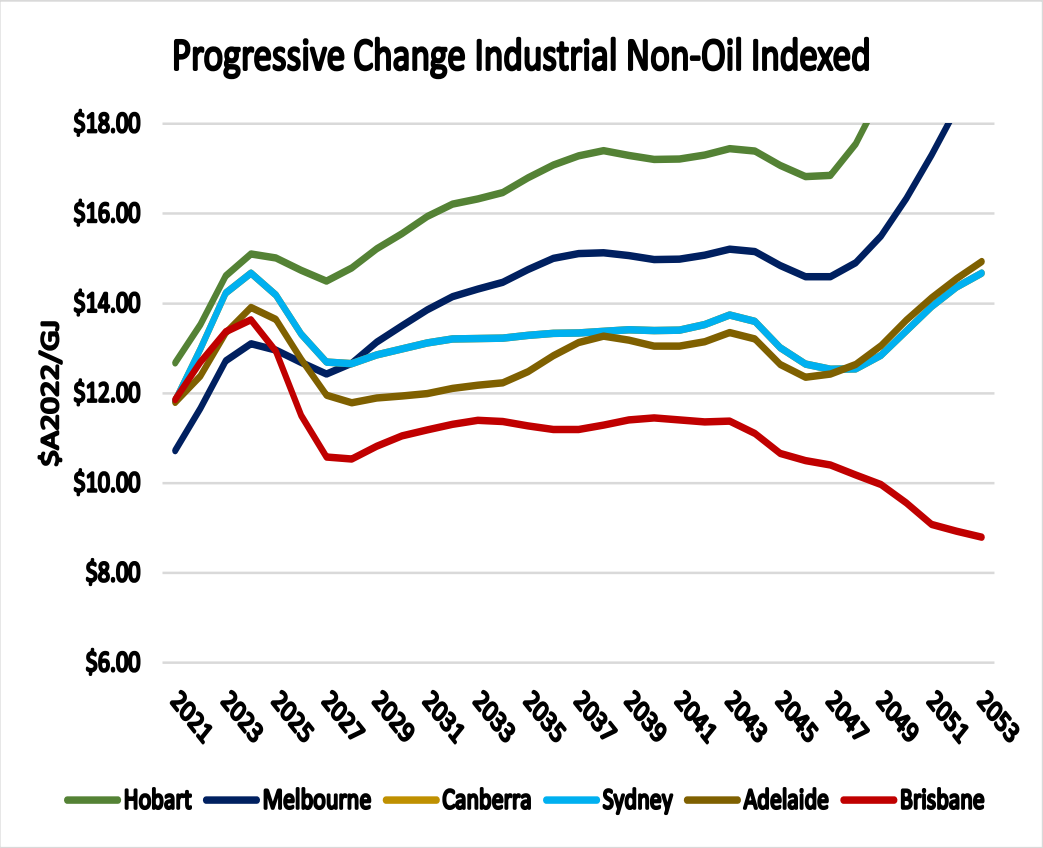
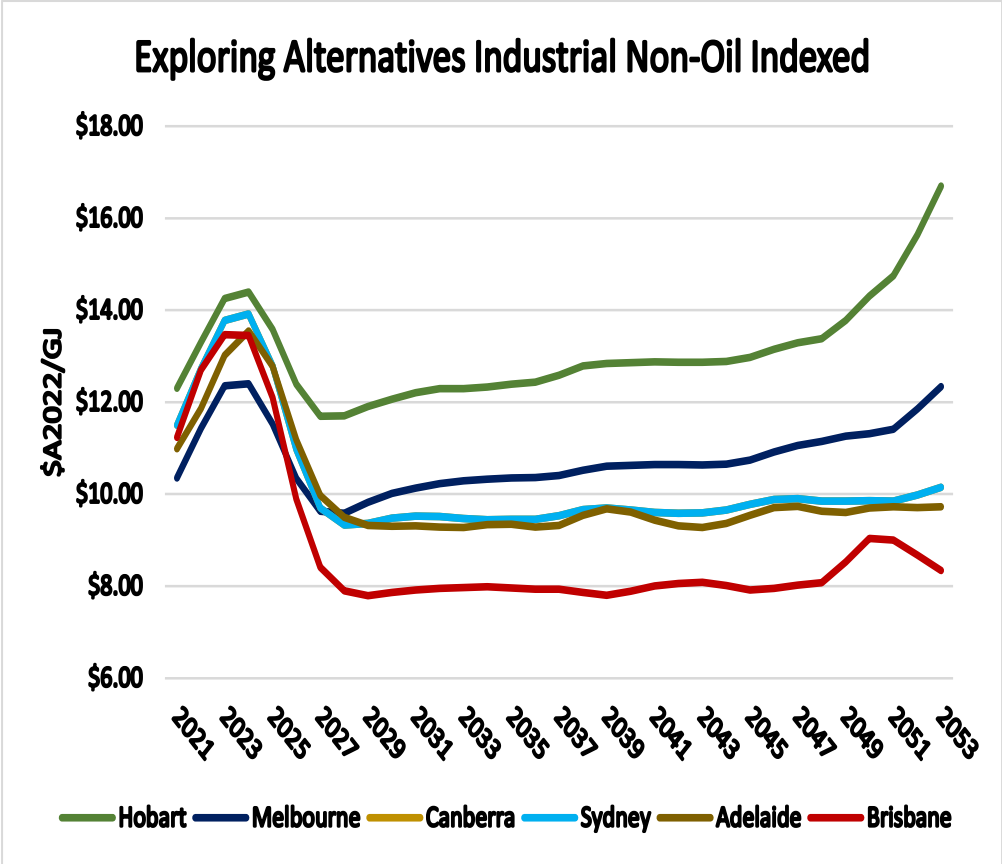
In Progressive Change prices rise owing to higher costs, less competition and lower resource development costs. Exploring Alternatives reflects opposite trends.





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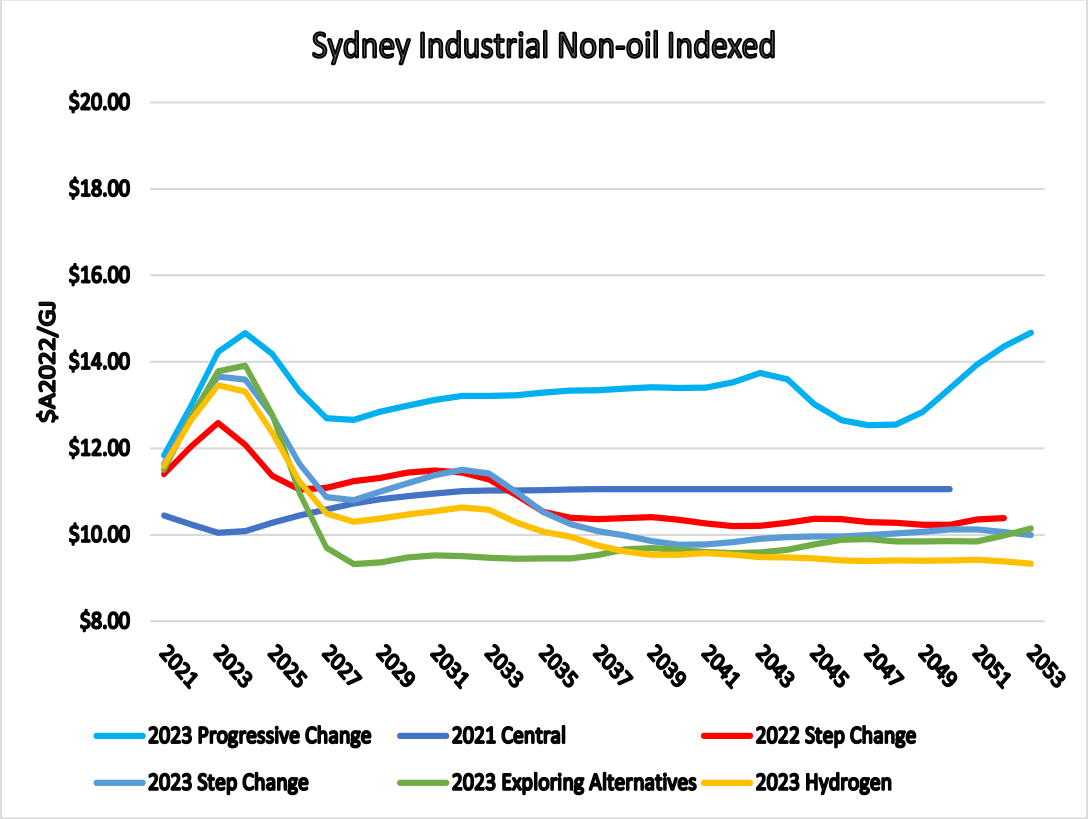
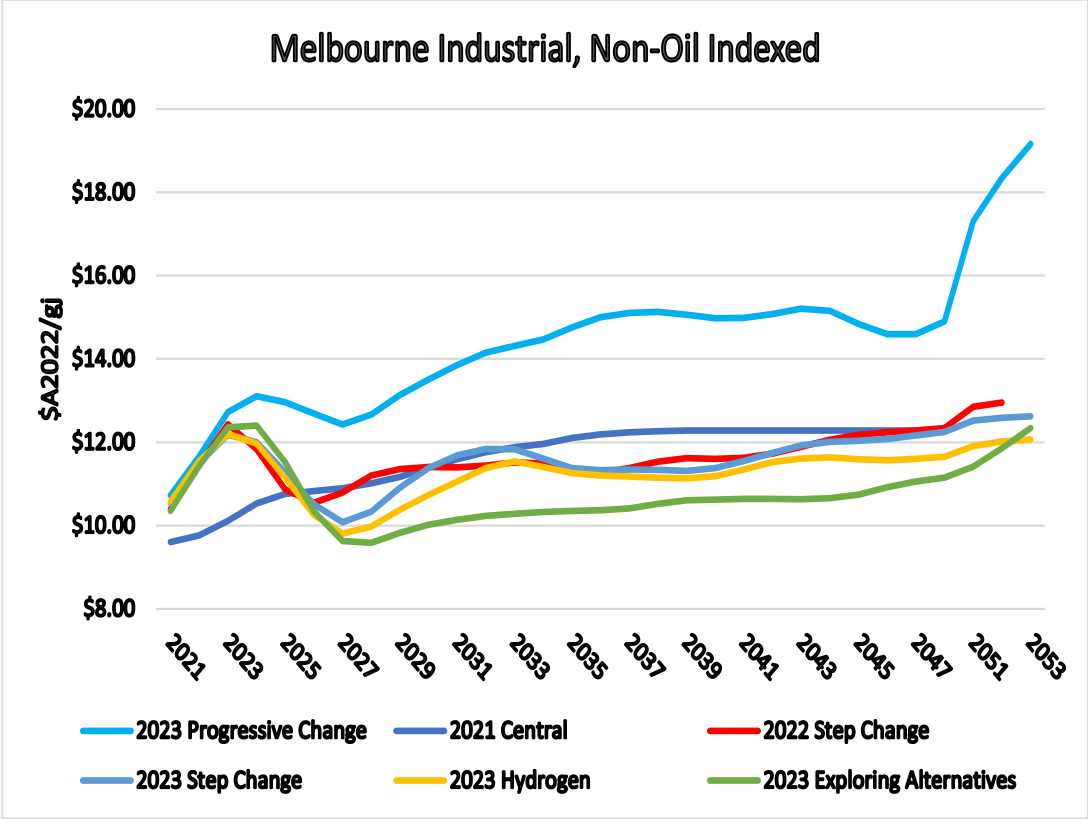
Sydney prices are lower in scenarios with declining demand (lower LNG prices). Melbourne Prices are lower in scenarios with lower resource costs





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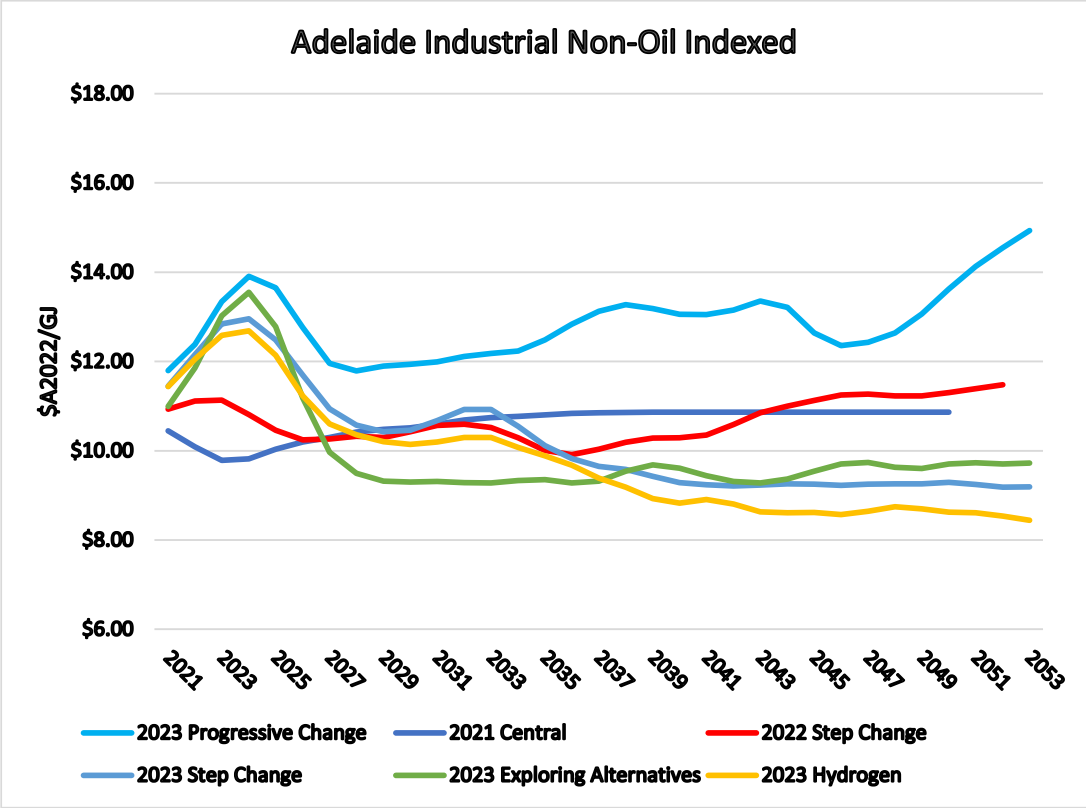
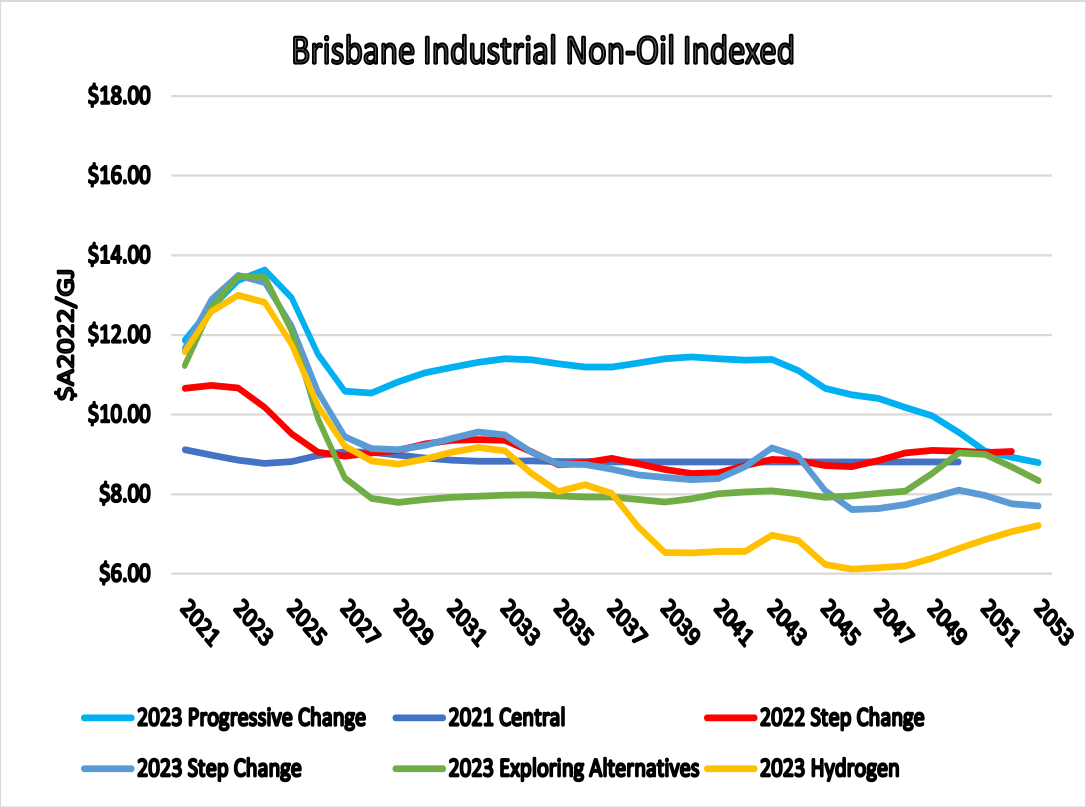
Adelaide and Brisbane prices are lower in scenarios with declining demand (lower LNG prices).





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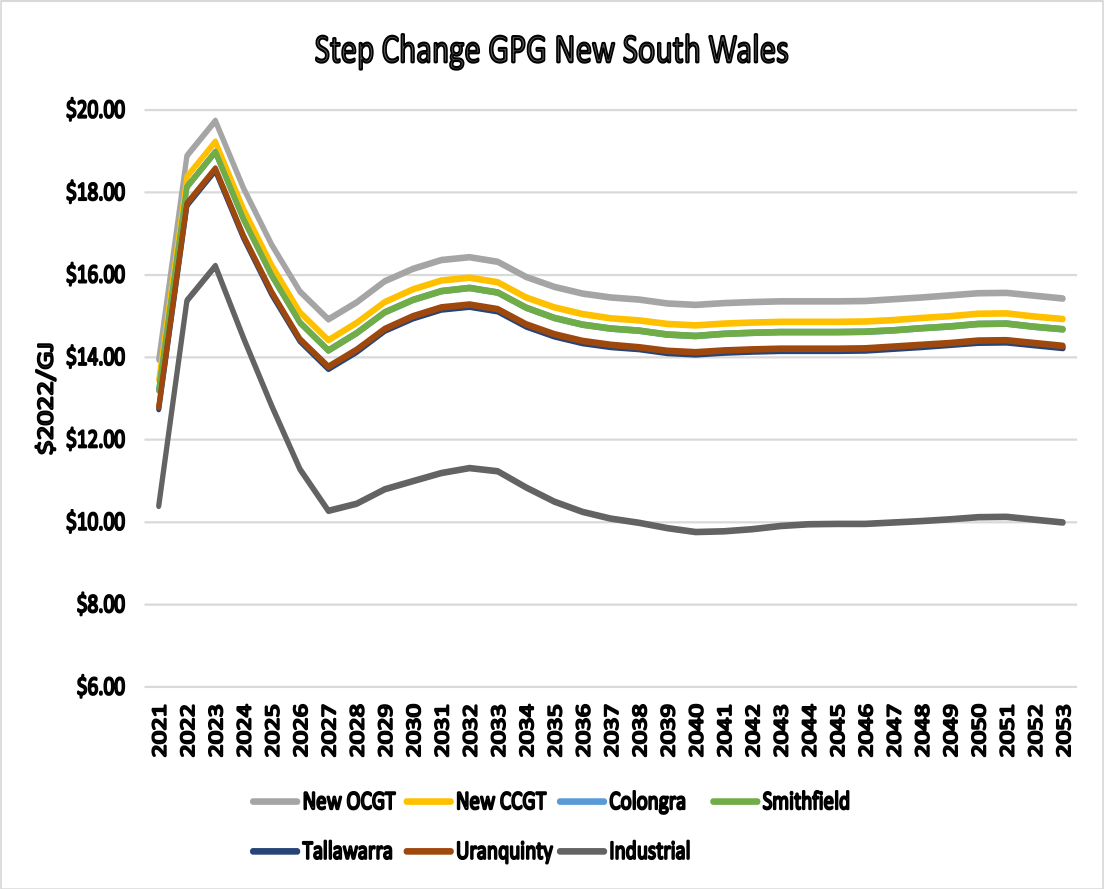
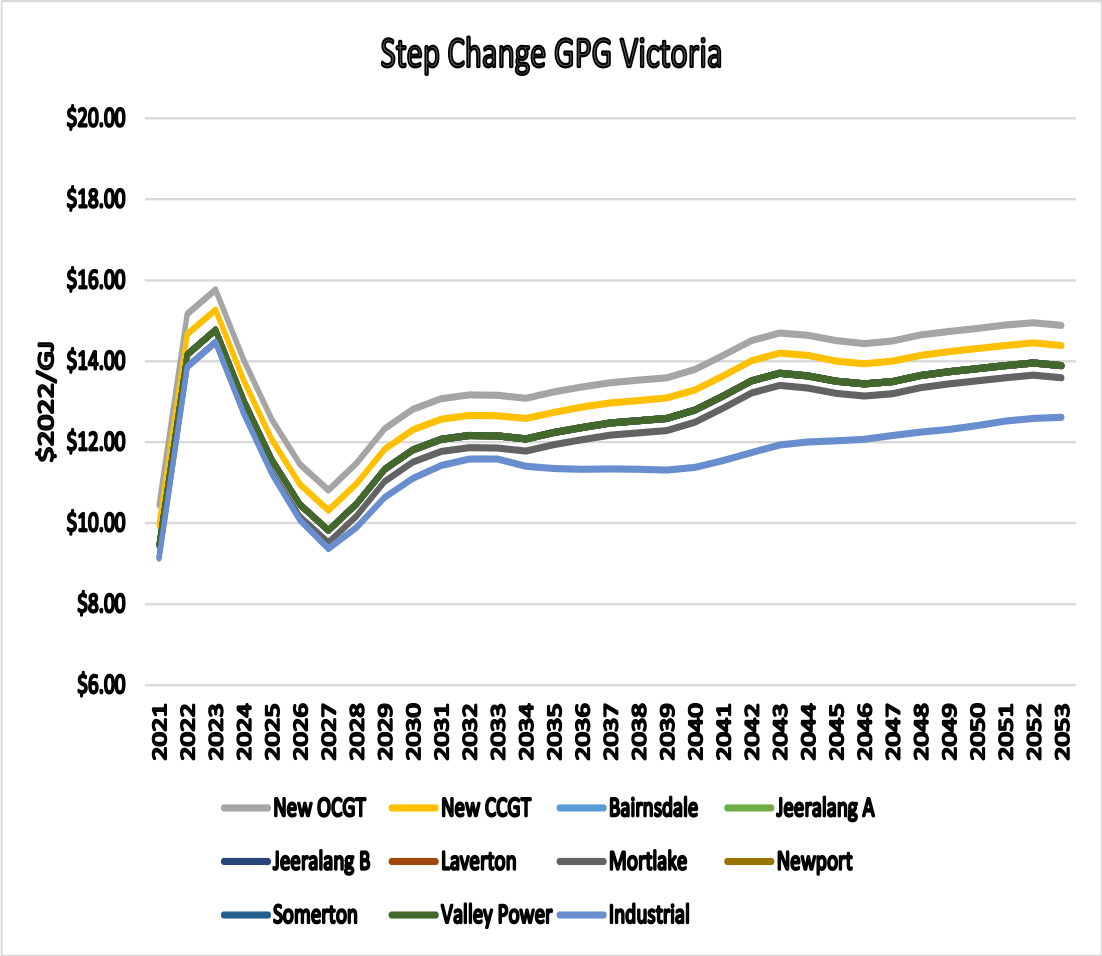
Step Change GPG Gas Prices NSW & Vic





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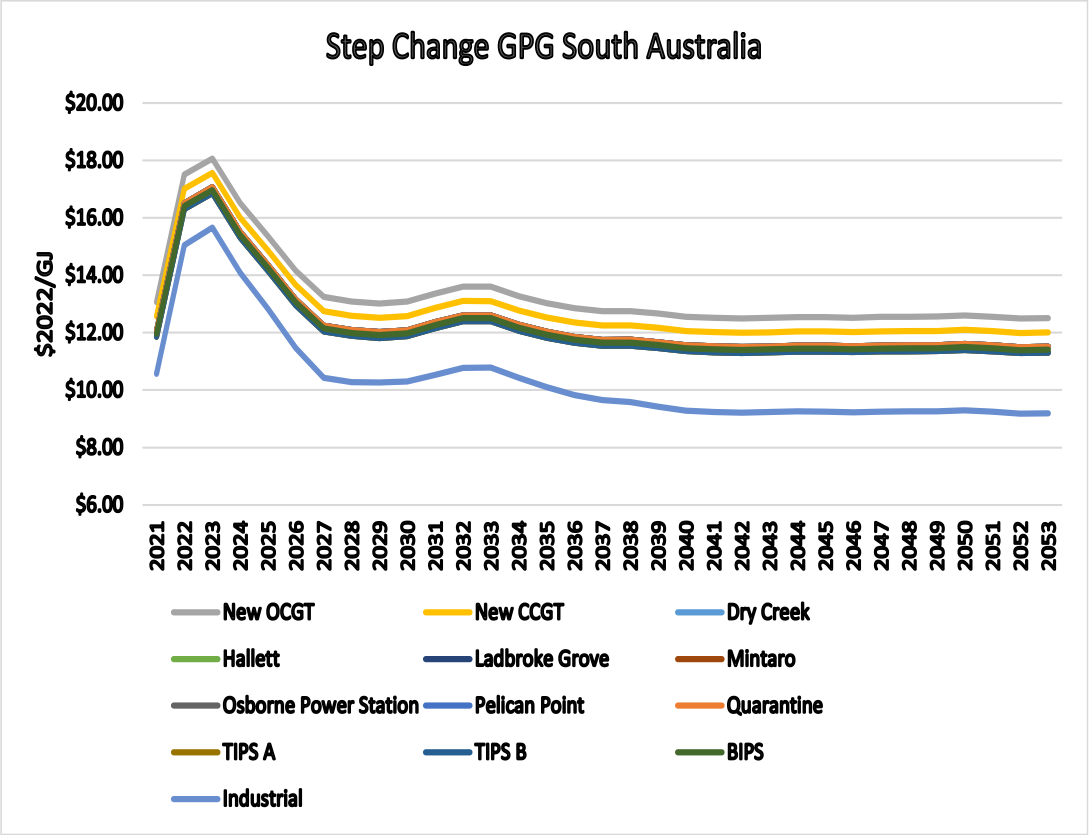
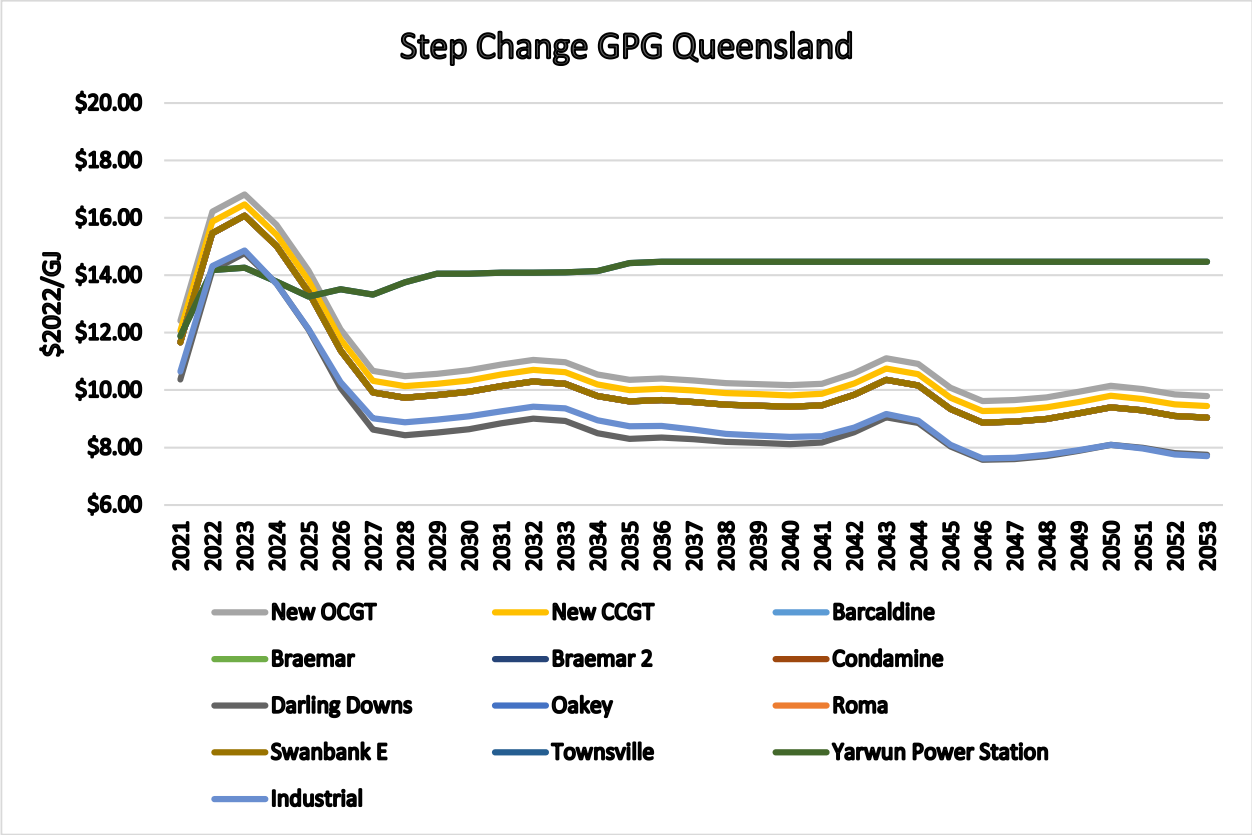
Step Change GPG Gas Prices SA & Qld





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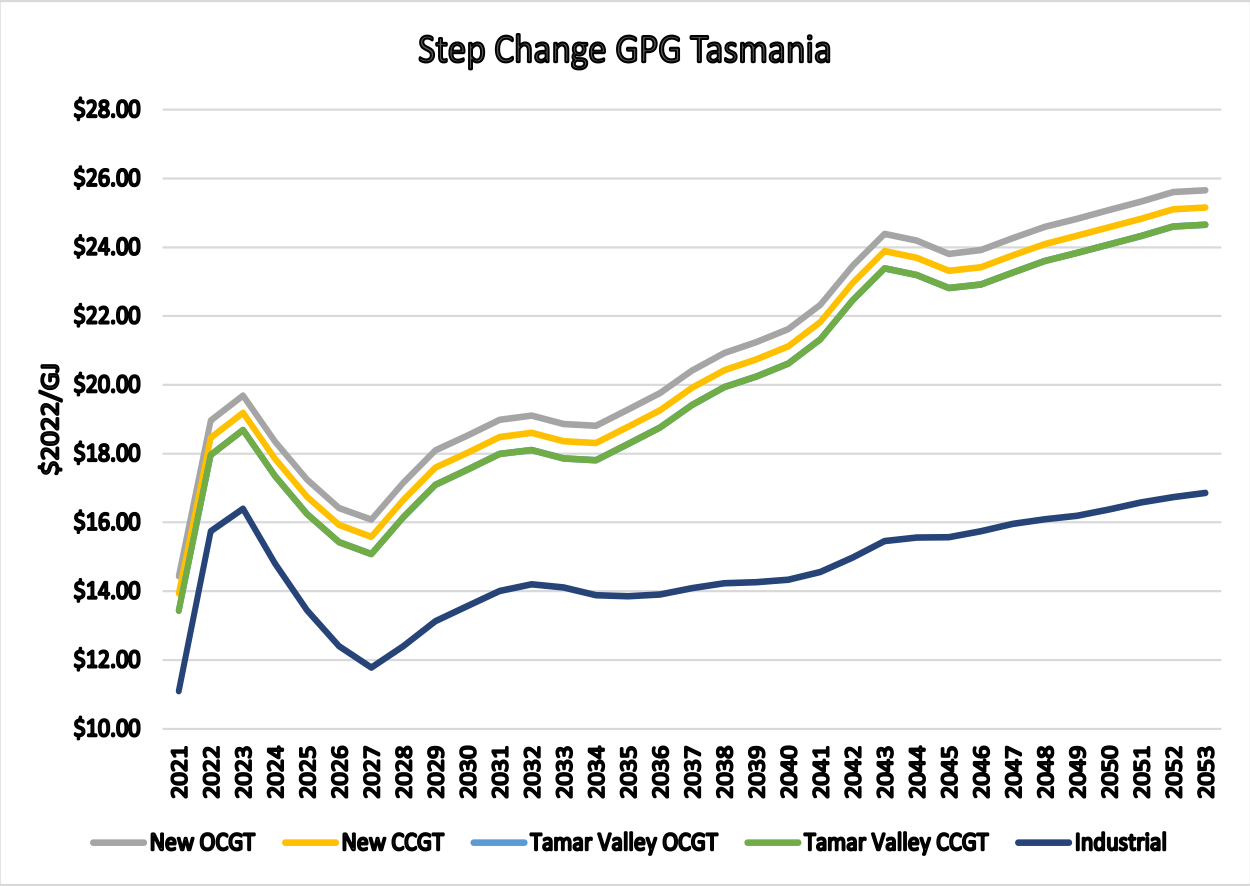
Step Change GPG Gas Prices Tas



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Additional Material

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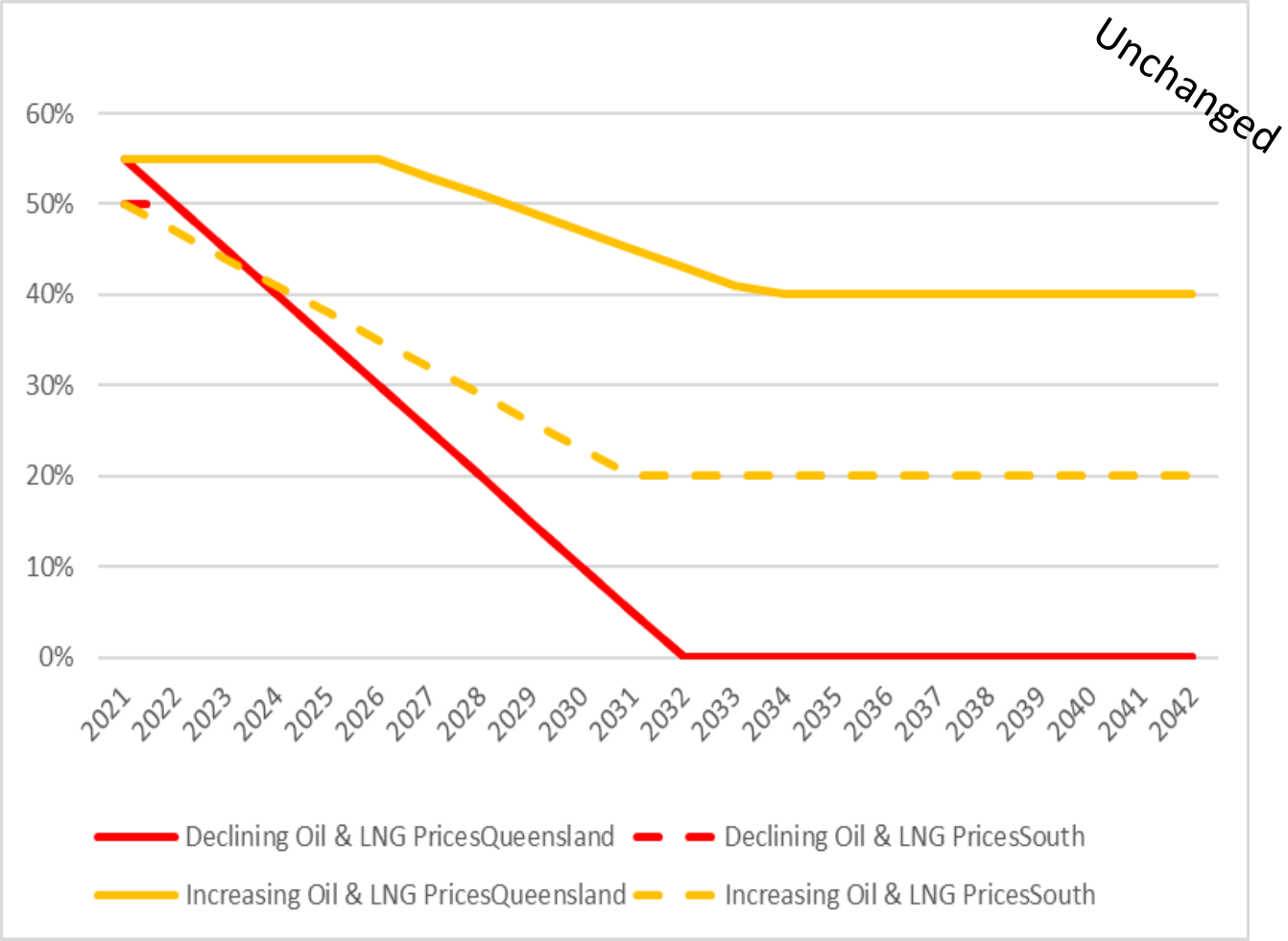
Oil indexation values applied to Gas price forecasts



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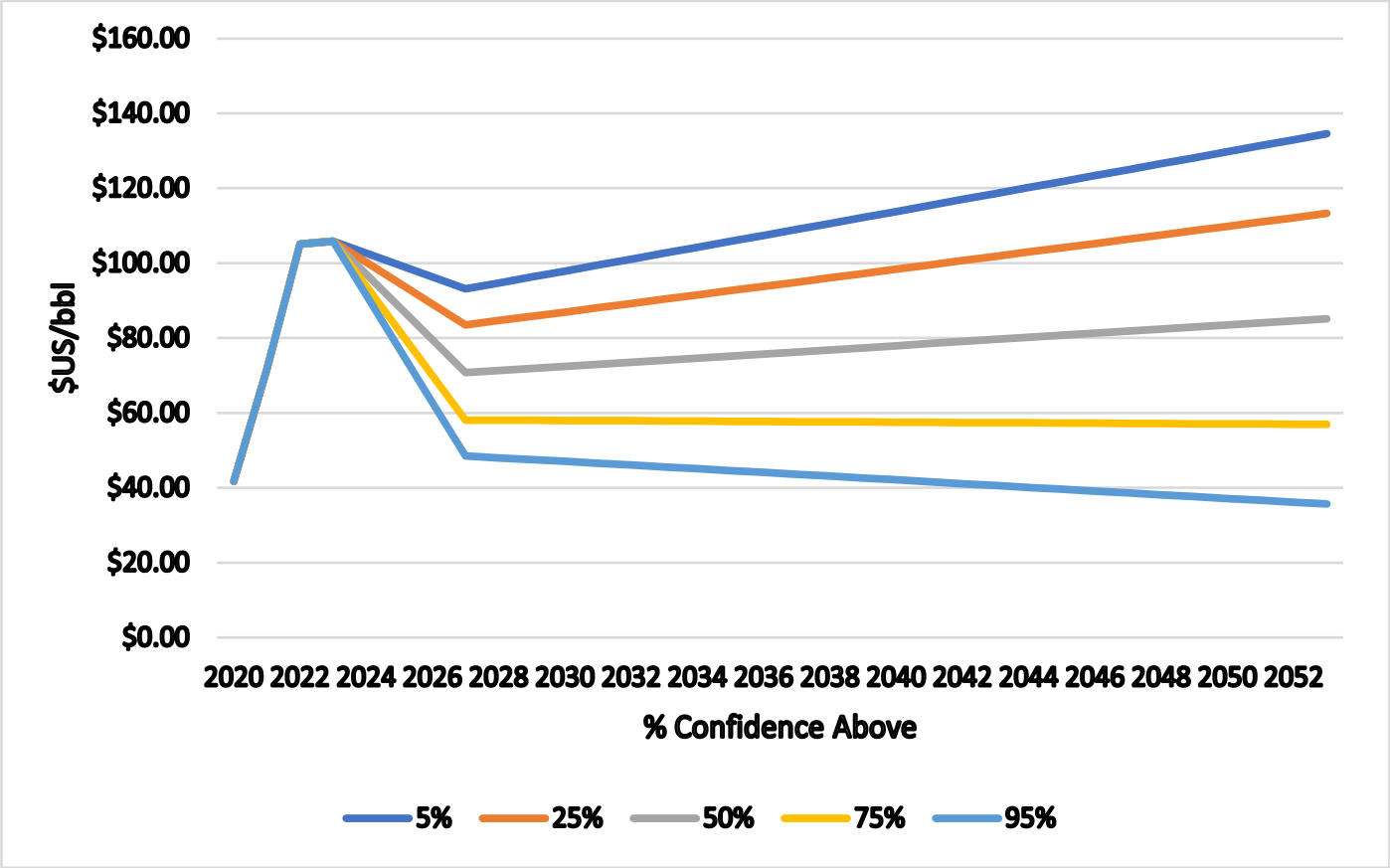
LGA's Oil Price Forecast



Oil Price Scenario	Applied in which scenario?
5%	None
25%	Progressive Change
50%	Step Change, Exploring Alternatives
75%	Hydrogen Export
95%	None

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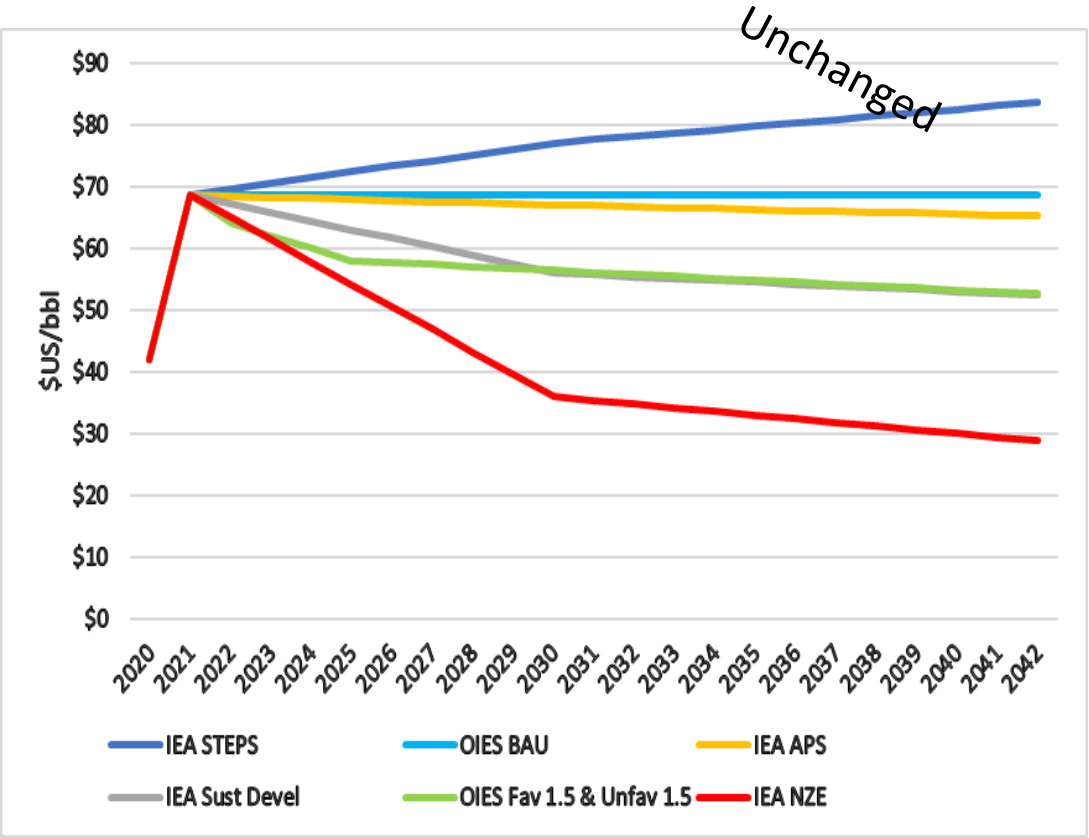
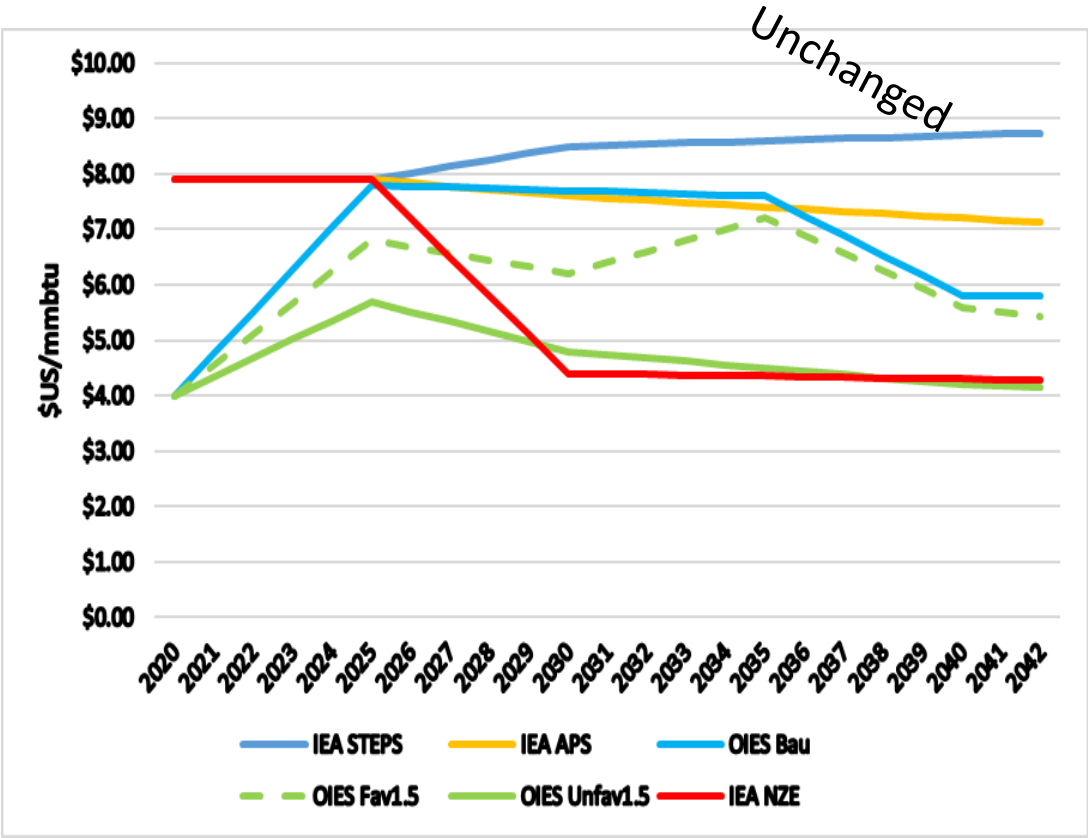
Declining Oil (Brent) and LNG (Japan Spot) Prices due to Decarbonisation – 3rd Party Projections





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