DRAFT GAS PRICE PROJECTIONS for 2022 - 2042

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Study Objective

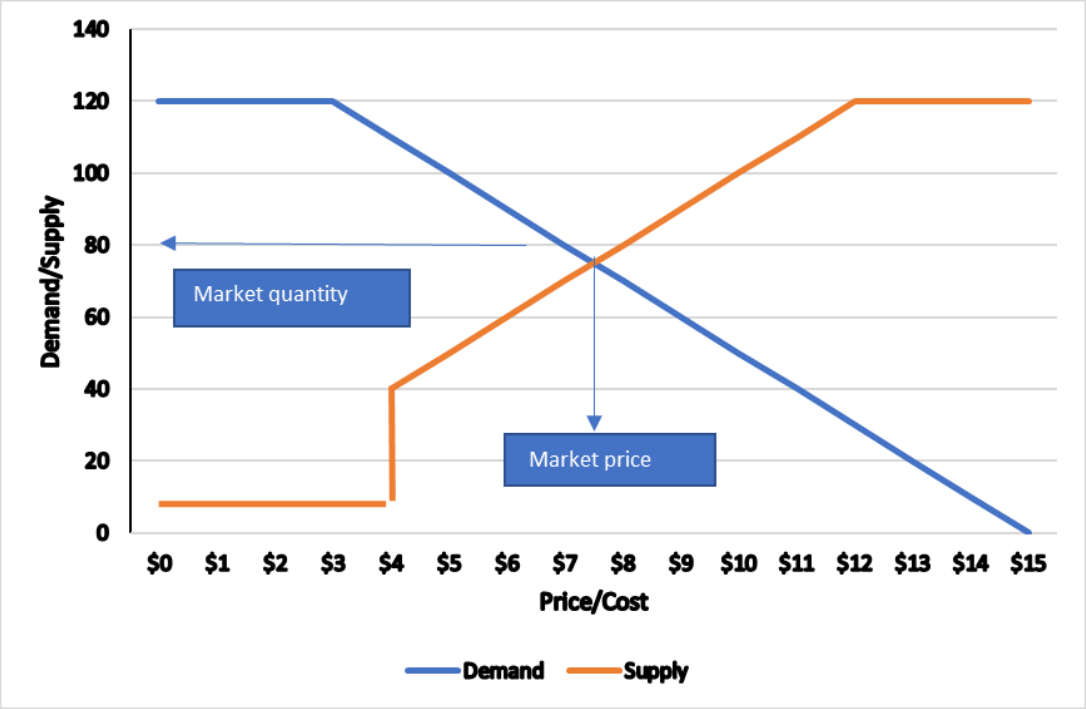
- Projection of gas prices in the Eastern Australian natural gas market (NSW, VIC, QLD, SA and TAS) over the period 2021-2042.
  - Takes into account exports from Gladstone and potential imports
  - Excludes supply of bio-gases and Hydrogen
- Gas market prices are largely determined by contract negotiation between producers and buyers
- 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 (2021 GSOO Table 5) In response to feedback
- All gas price estimate charts are Industrial unless labelled otherwise

Gas Market Changes since 2020

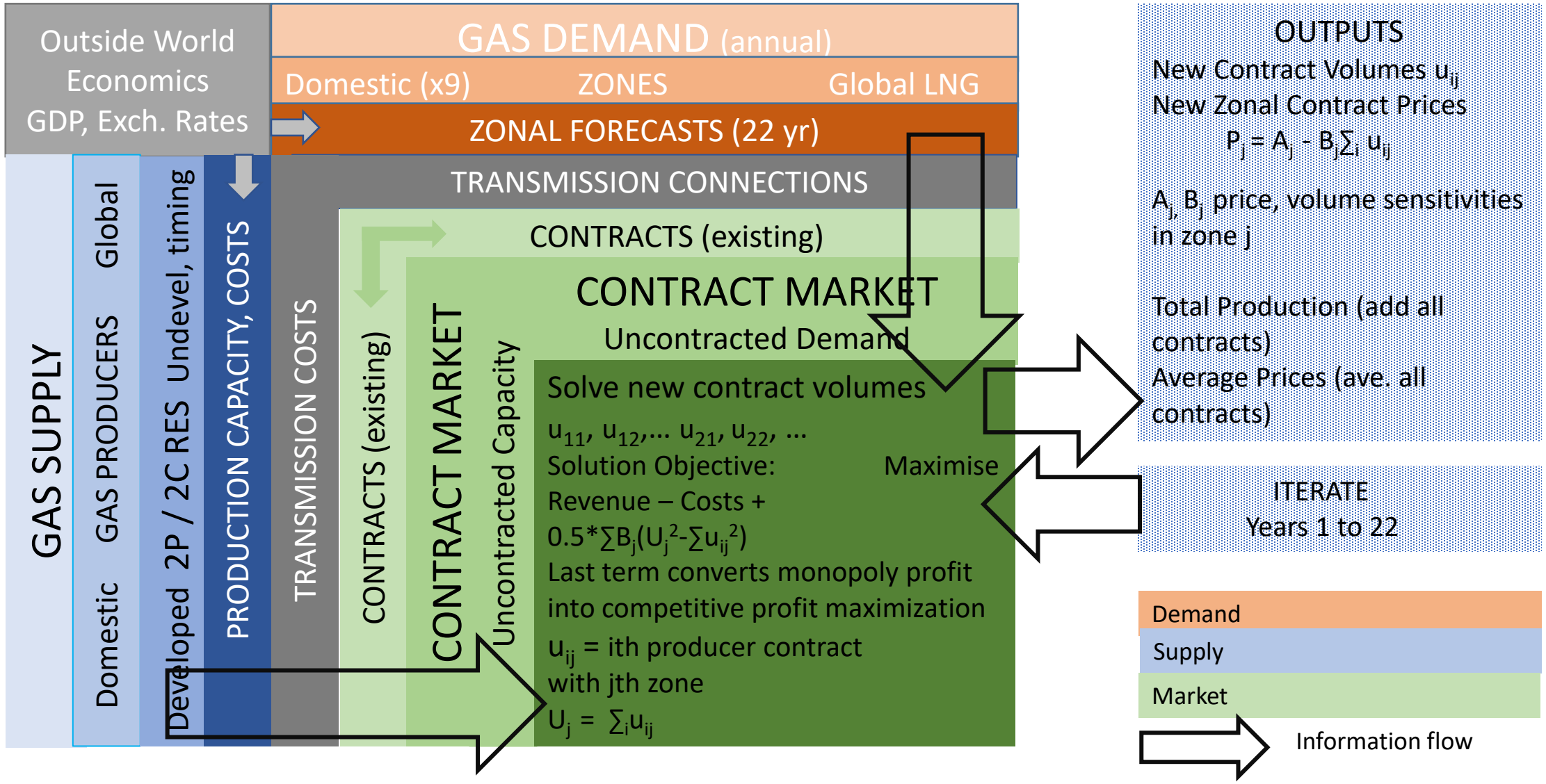
- Economic recovery stimulates rapid energy price escalation following depressed prices during COVID
  - A more difficult forecasting environment
- Industry focus on Net Zero 2050/Decarbonisation
  - Future domestic and global gas demand uncertain
  - Potential for increasing costs – diseconomies of scale, costs of capital?
  - Constraints on resource development or promotion of gas as transitional fuel?
  - Globally, forecasts of long-term declines Oil and LNG demand and prices, despite current price escalation
- Port Kembla Import Terminal is assumed to be proceeding
  - Imports at competitive prices drive domestic prices in some scenarios

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



Gas Market Model Schematic



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
- Benchmarked against 2021 contract prices published by ACCC

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.

Model Improvements since 2020

- Variable transmission costs – fixed costs no long tenable
- LNG and Oil Data Sources – reference volume and price forecasts by IEA and OIES
- Modelling to 2050 instead of extrapolation from 2040
- Benchmarking against ACCC 2021 contract prices
- Sensitivity testing to variations in key parameters (for final report)
- Improved representation of gas producers

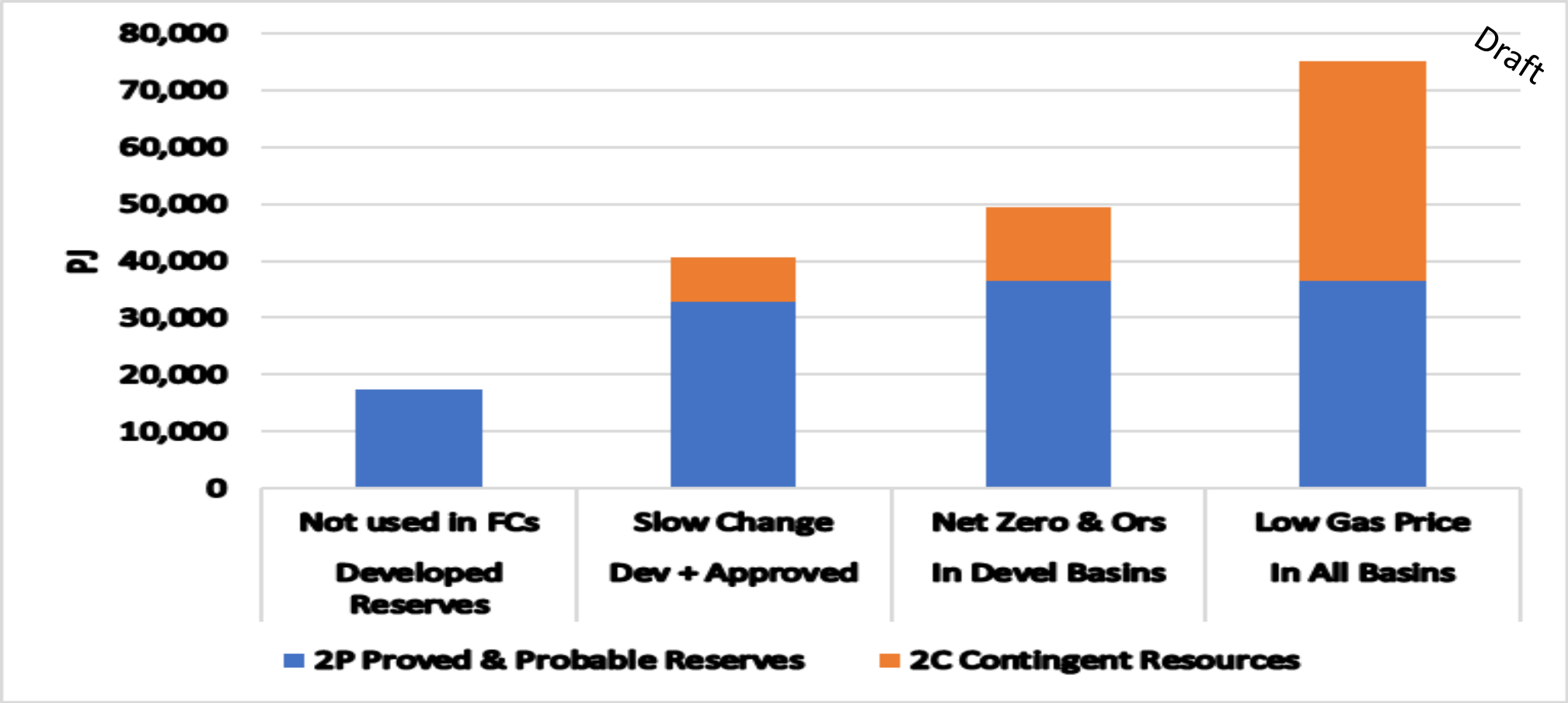
Assumptions Common to all Scenarios

- Domestic demand provided by AEMO – compatible with previous presentation
- Imports possible at Port Kembla in all scenarios – other terminals viability not tested
- No carbon prices considered in forecasts
- Production costs – variation between 2P and 2C but not within category (insufficient data)
- Transmission costs – escalate with inverse of aggregate demand New in response to 2020 feedback
- Global LNG demand – profile compatible with domestic profile
- Current global price pressures captured in 2022-24 via LNG prices

Scenario Specific Assumptions

Scenario	Resource Development	Production Costs	LGA's Oil Price Projections
Slow Change	Only Gas Resources in Fields Already Developed + Approved for Development	High (Ave.$6.40/GJ)	25%
Net Zero	Same as Slow Change + other fields in Producing Basins	Medium (Ave. $5.50/GJ)	50%
Step Change	Same as Net Zero 2050	Medium	75%
Strong Electrification	Same as Net Zero 2050	Medium	95%
Hydrogen Superpower	Same as Net Zero 2050	Low (Ave $4.60/GJ)	75%
Low Gas Price	Same as Net Zero 2050 + Gunnedah (2026), N Bowen (2026), Galilee (2026) and Beetaloo (2028)	Low	50%

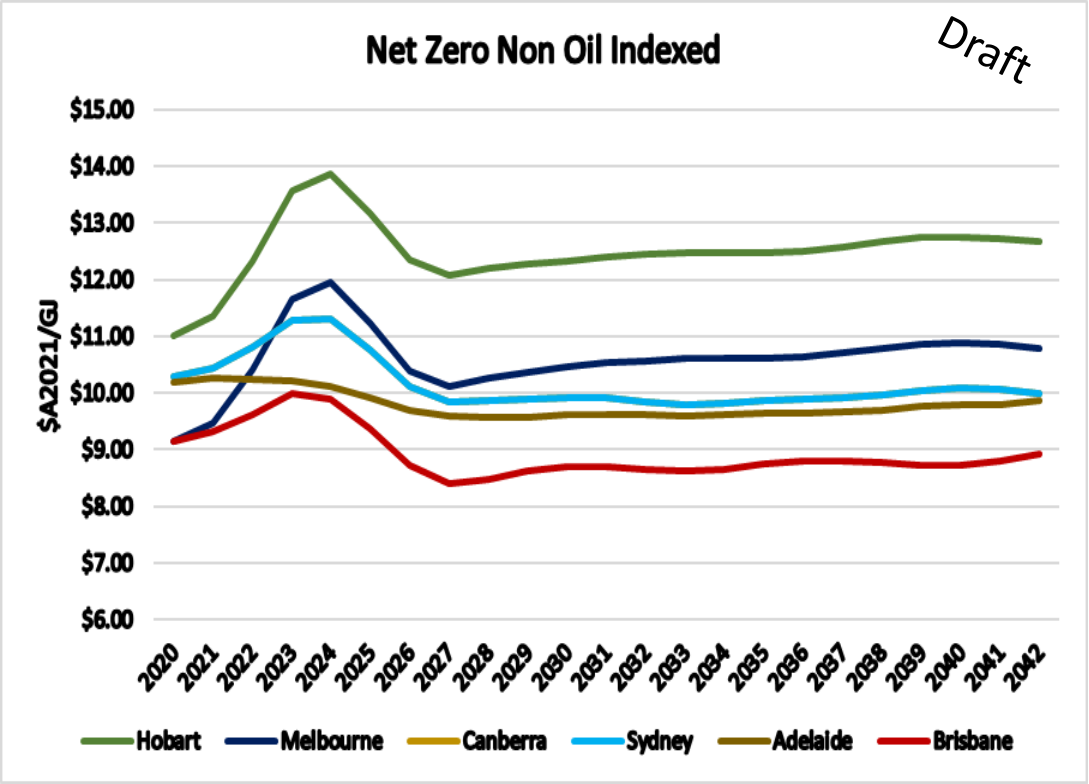
A Comparison of Domestic Gas Resources

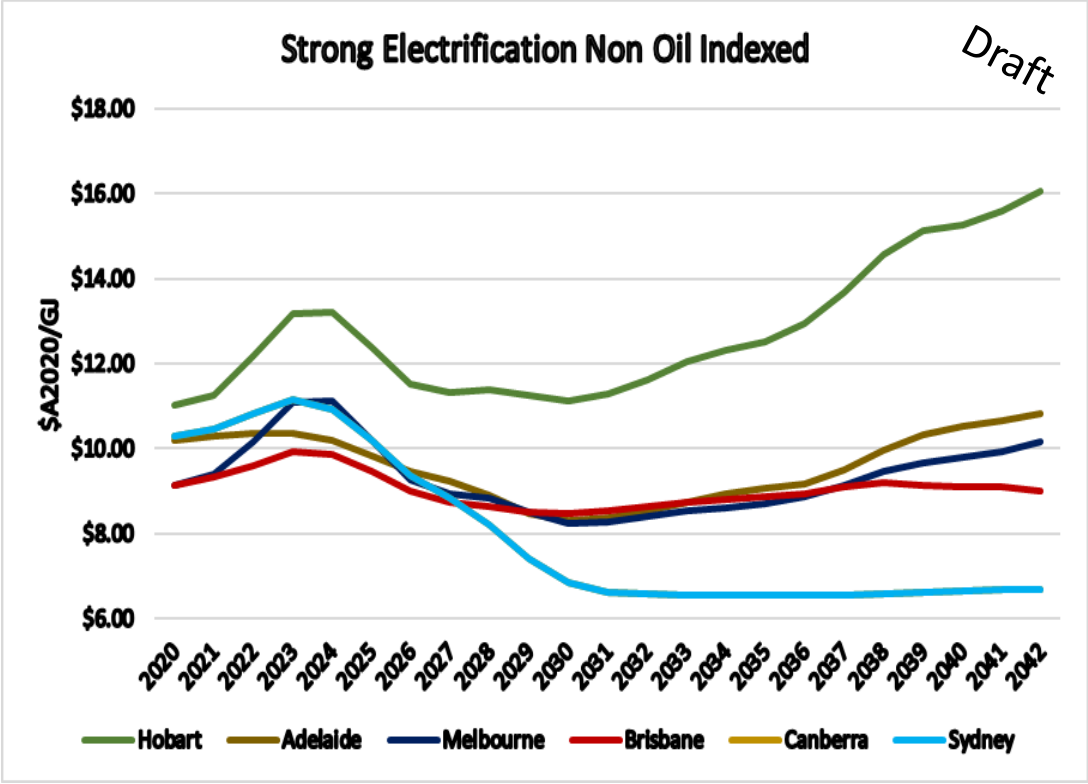


Summary of Modelling Outcomes

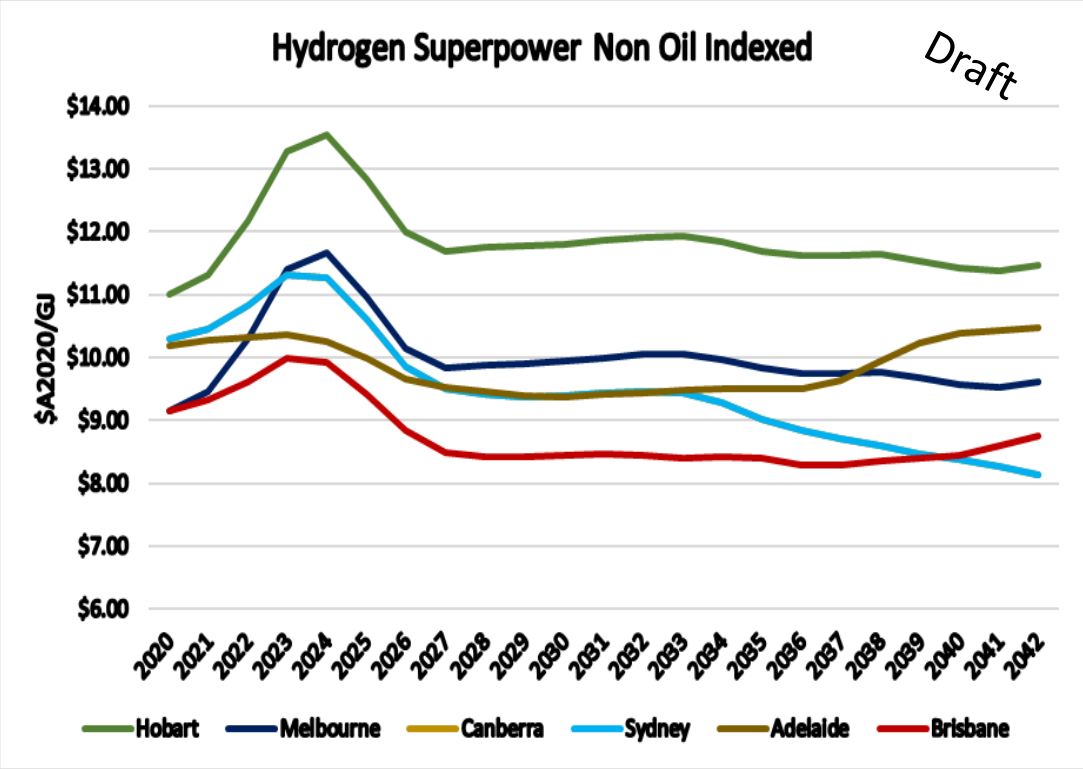
- Sydney prices track LNG prices most closely.
- Brisbane prices are less affected by LNG prices – indirectly via impact on exports
- Melbourne and Adelaide are in between (and provided in the appendix)
- Scenarios with declining domestic demand (Step Change, H2 Superpower and Strong Electrification) have matching global LNG demand and falling Global LNG prices. This pushes all Southern States prices down, particularly Sydney
- These scenarios also have increasing transmission costs, which lift prices in the 2030s.
- The above cause scenario relativities to vary significantly from zone to zone e.g. in Sydney Strong Electrification has the lowest prices whereas in Brisbane Low Gas Price is lowest.
- Oil price indexation tends to amplify the effect of LNG prices. It is assumed that to avoid this, oil price indexation will decline.

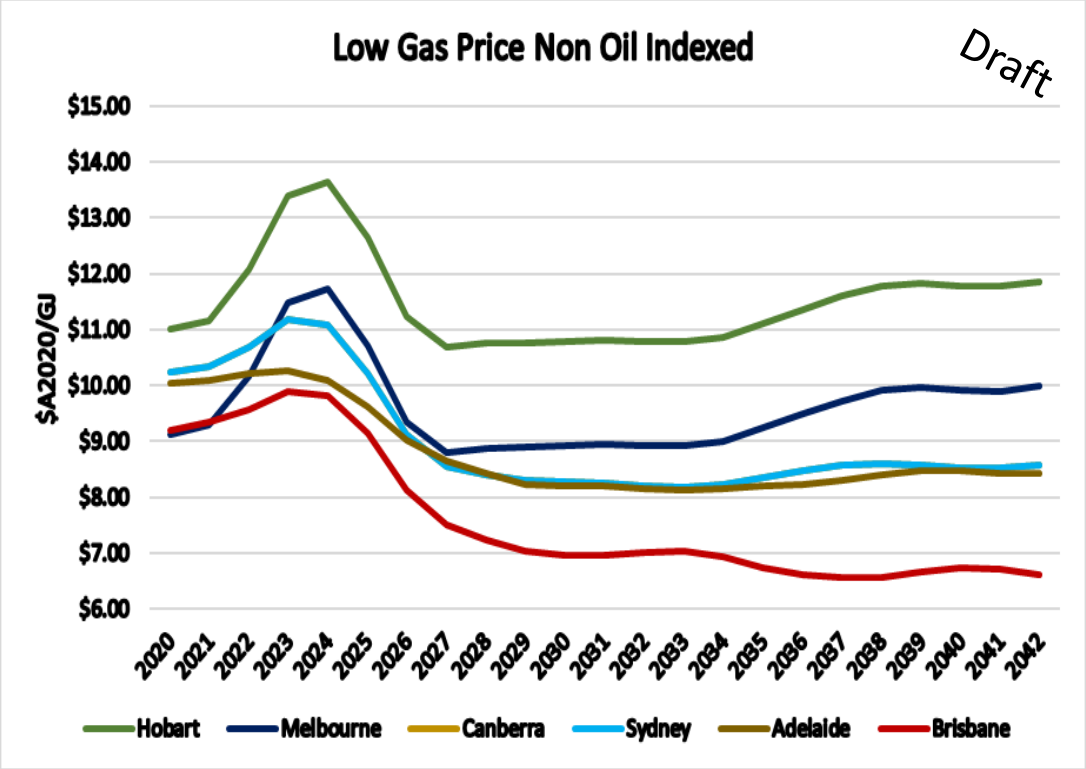
In Net-Zero prices are steady but in Strong Electrification decline due to low LNG



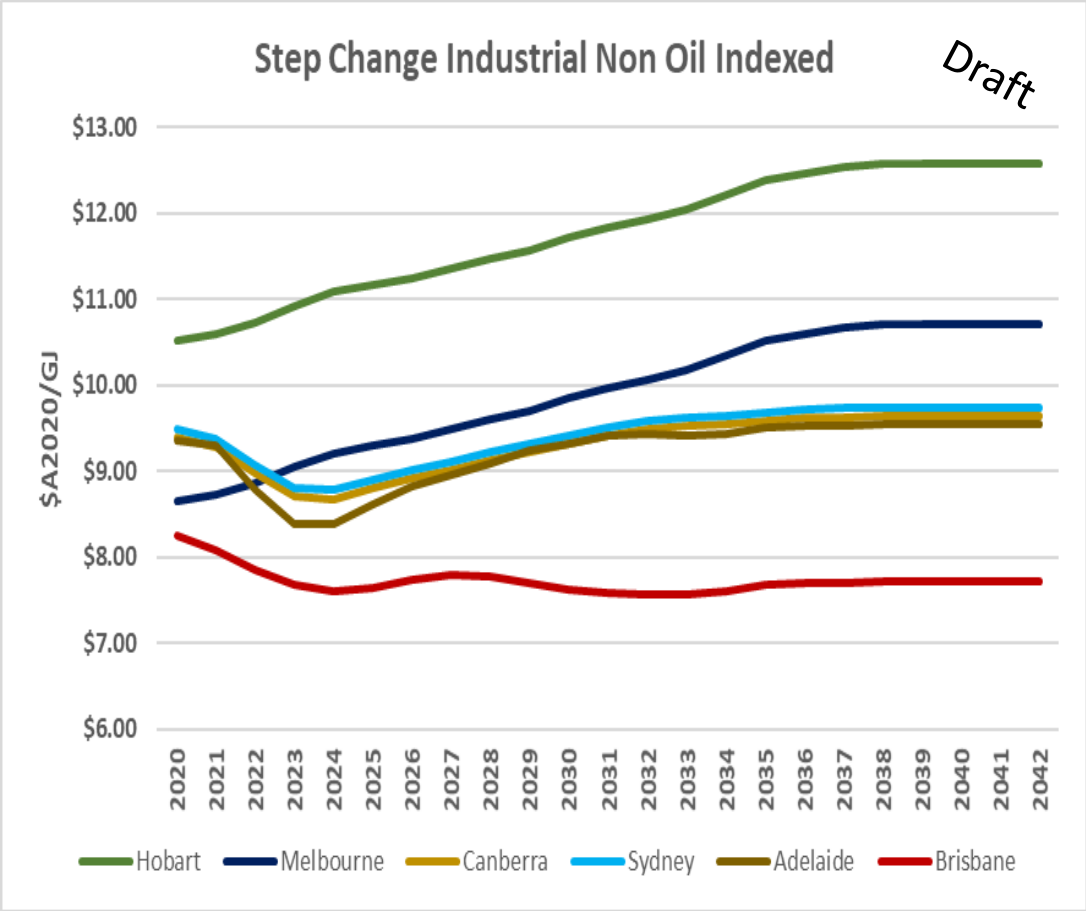


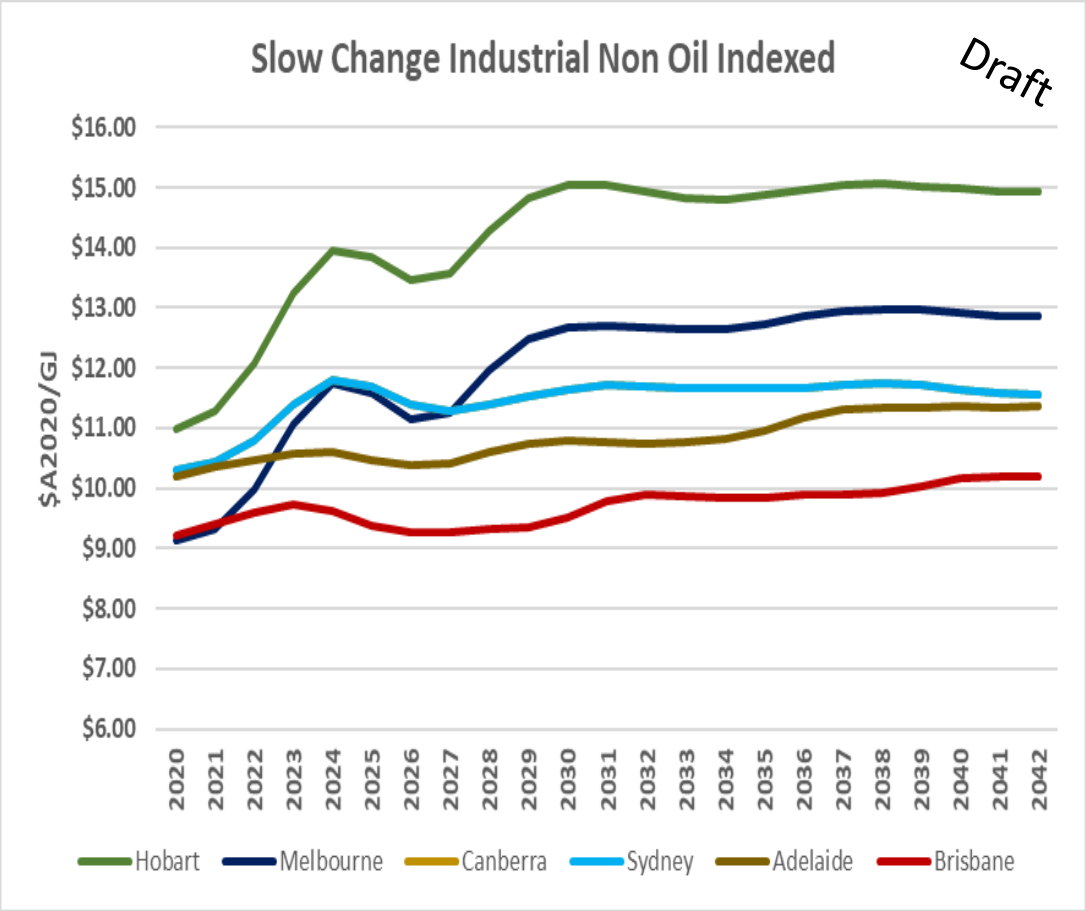
Hydrogen Superpower similar to Net Zero.
Low Gas Price reflects assumed lower gas development costs.



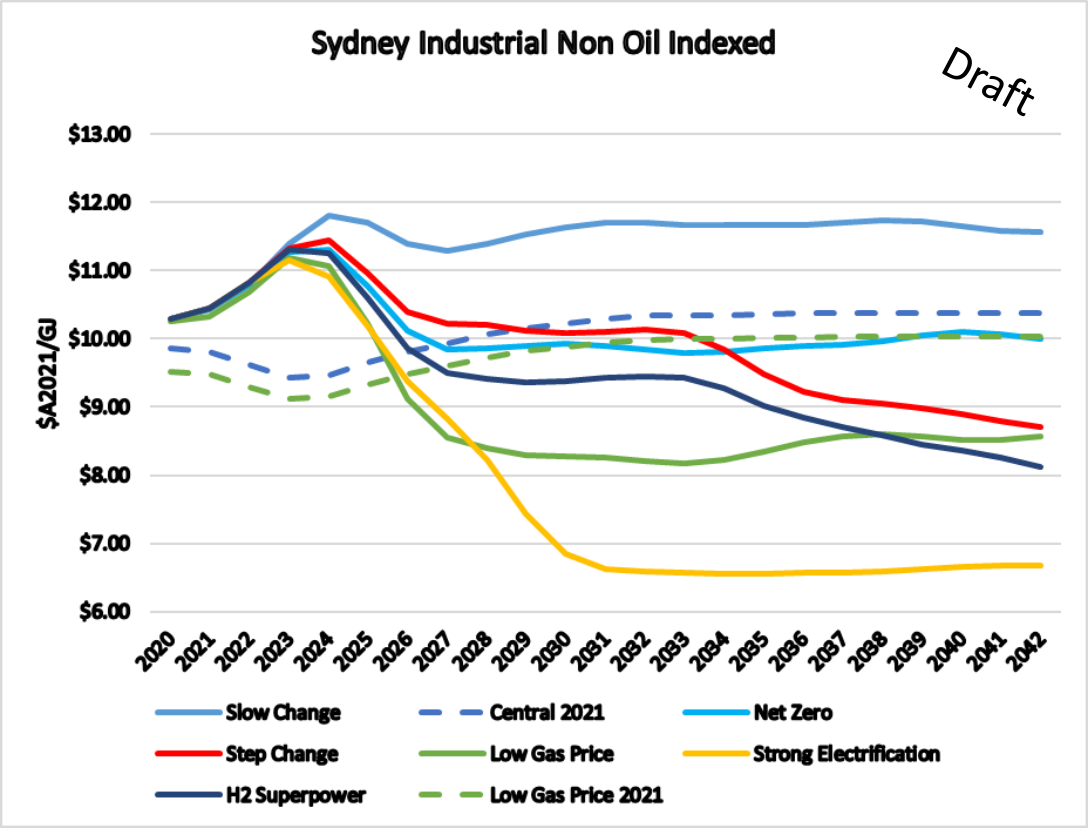


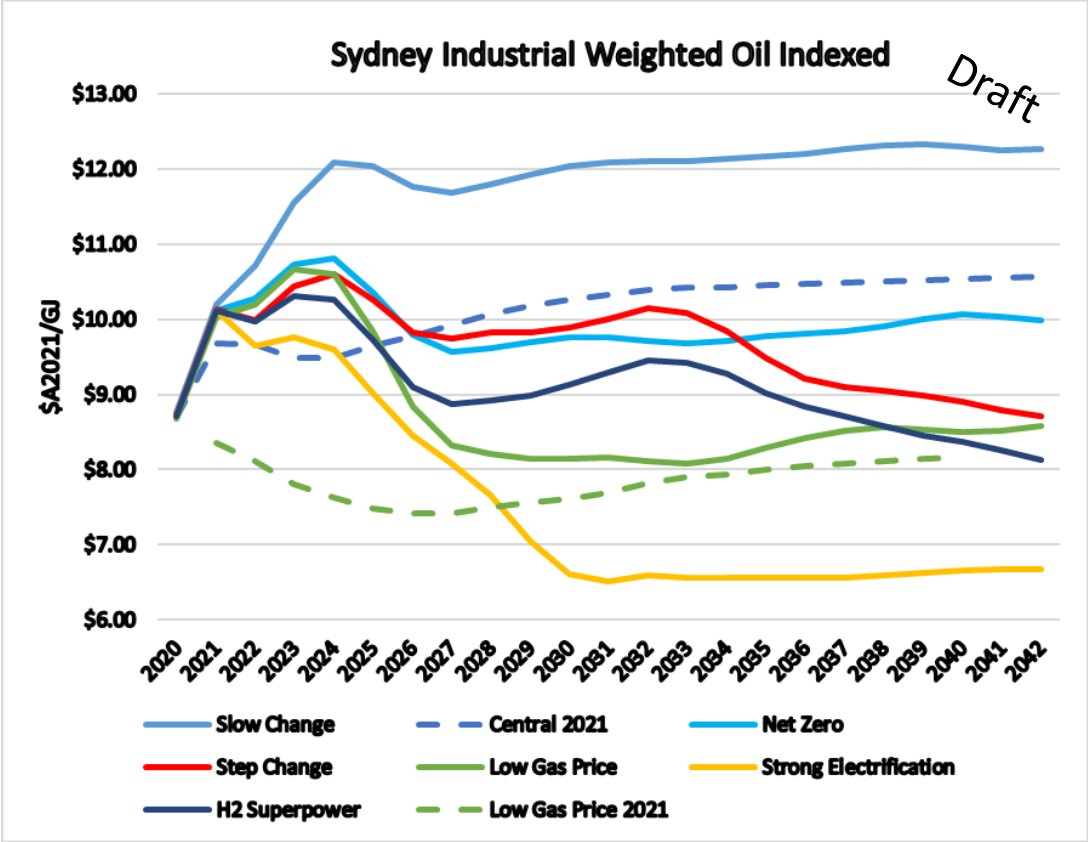
Step Change and Slow Change Non oil indexed



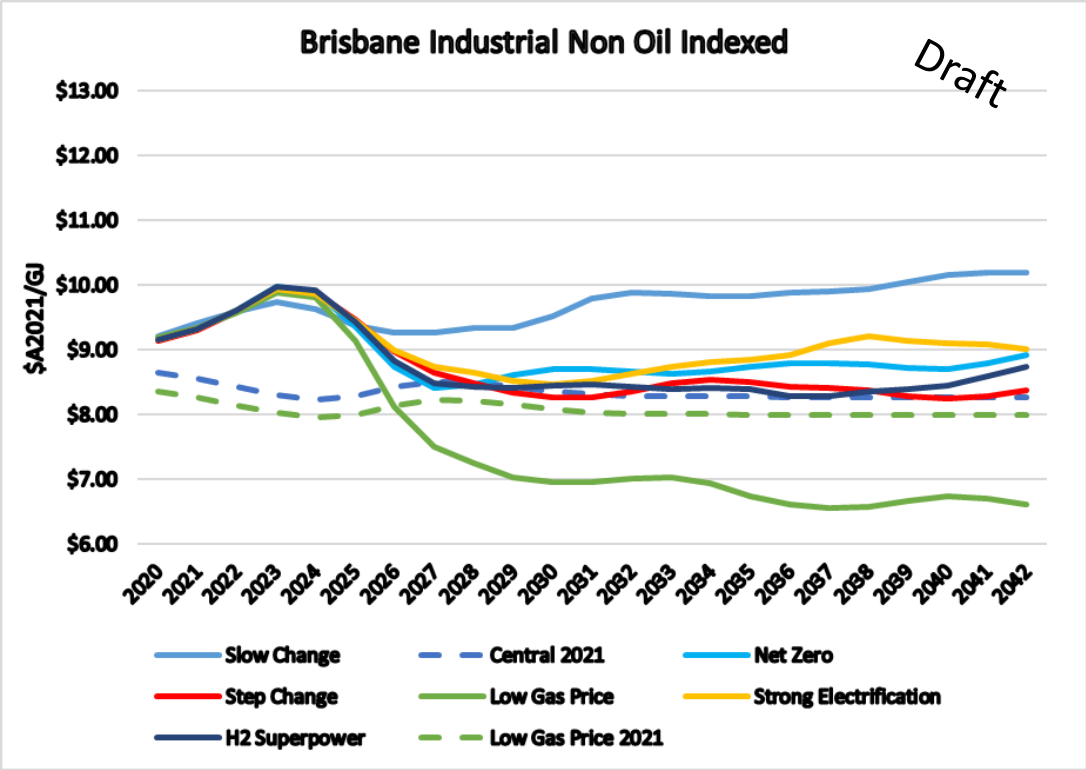


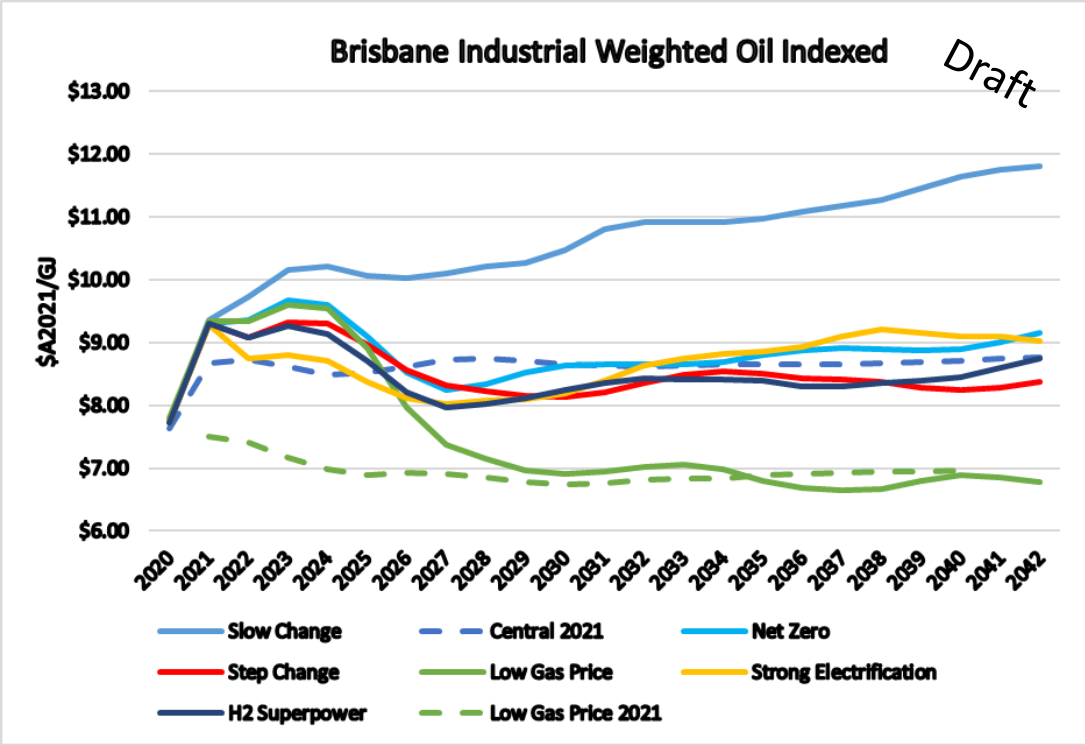
Sydney prices are lower in scenarios with declining demand (lower LNG prices)



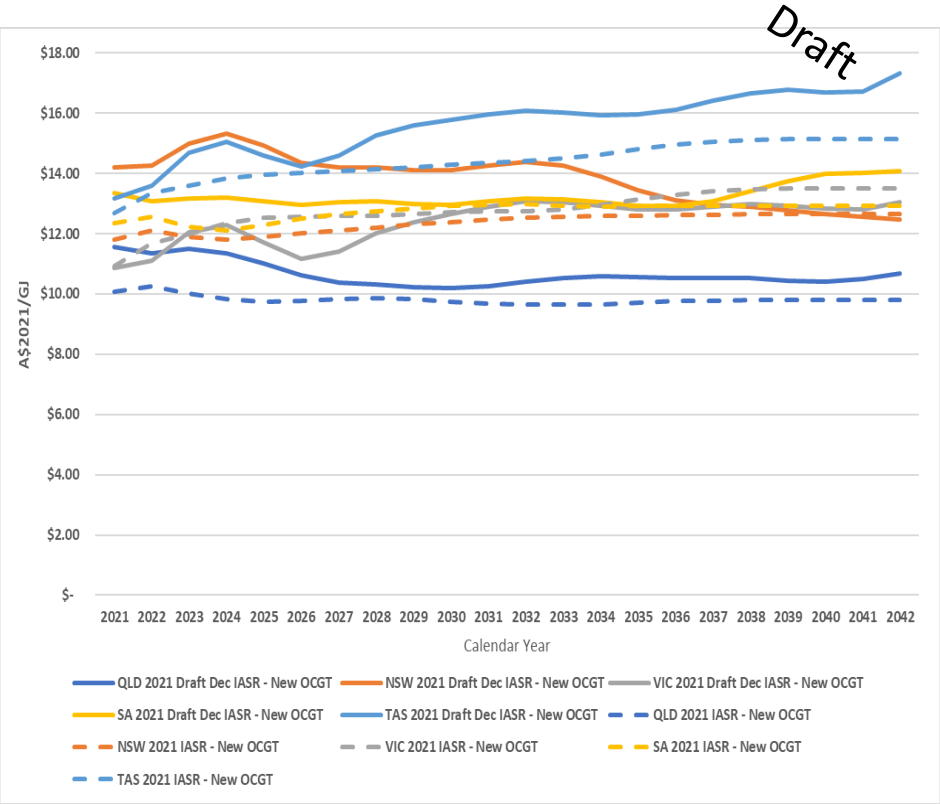


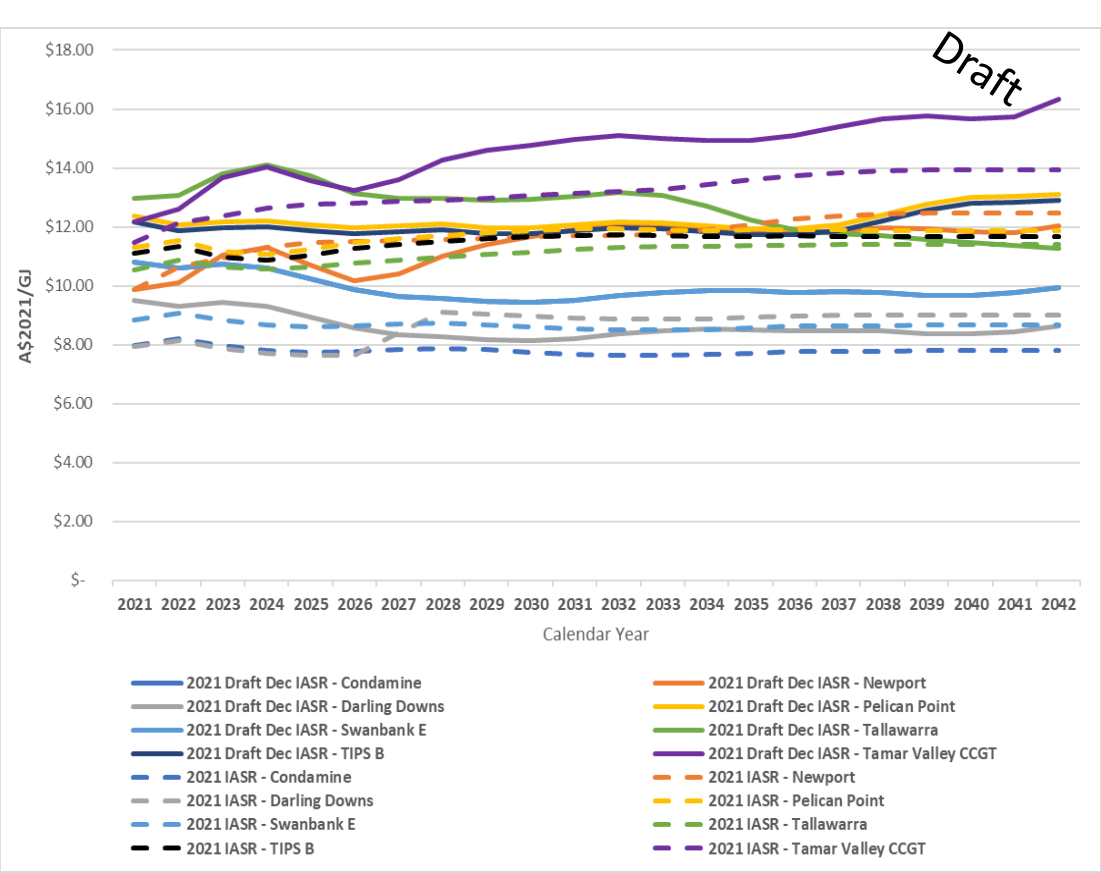
Brisbane prices are lowest in the Low Gas Price Scenario, where domestic costs are lower





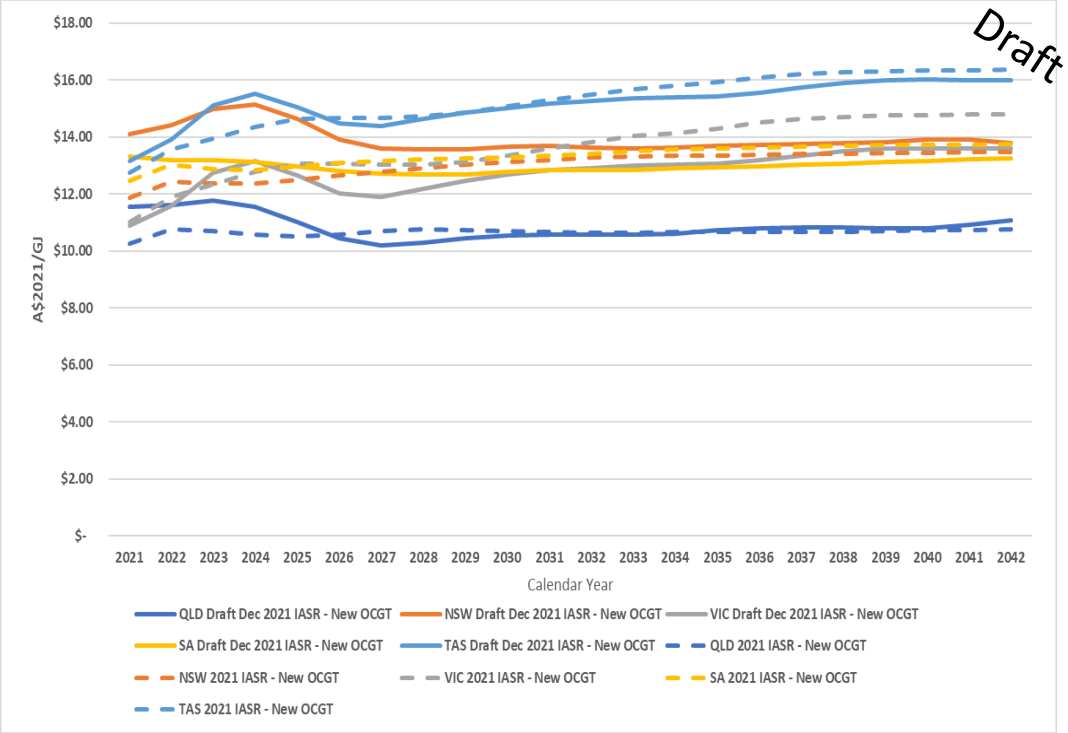
GPG Gas Prices (Step Change) show a relatively higher gas price forecast than previous

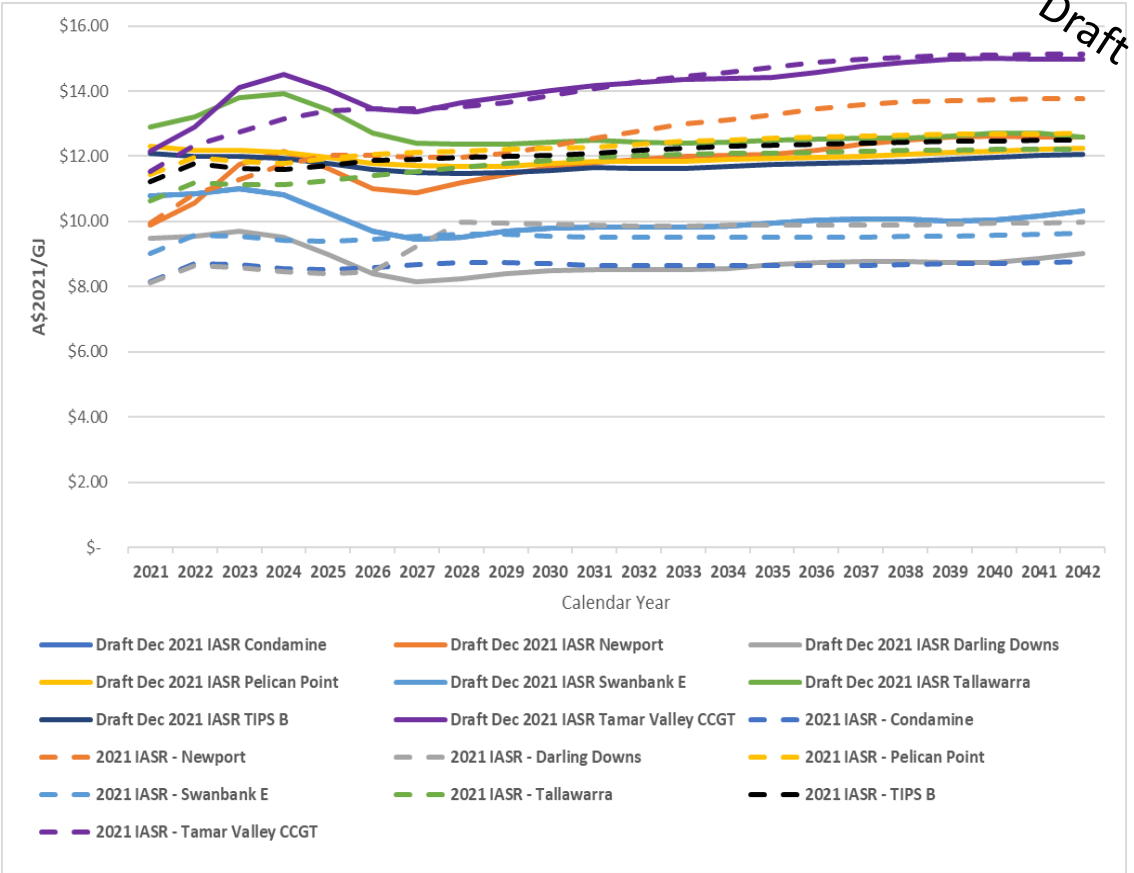




2021 IASR was released in July, and the Draft Dec 2021 IASR is developed using these LGA forecasts.

GPG Gas Prices (Net Zero 2050) show a relatively similar gas price forecast than previous





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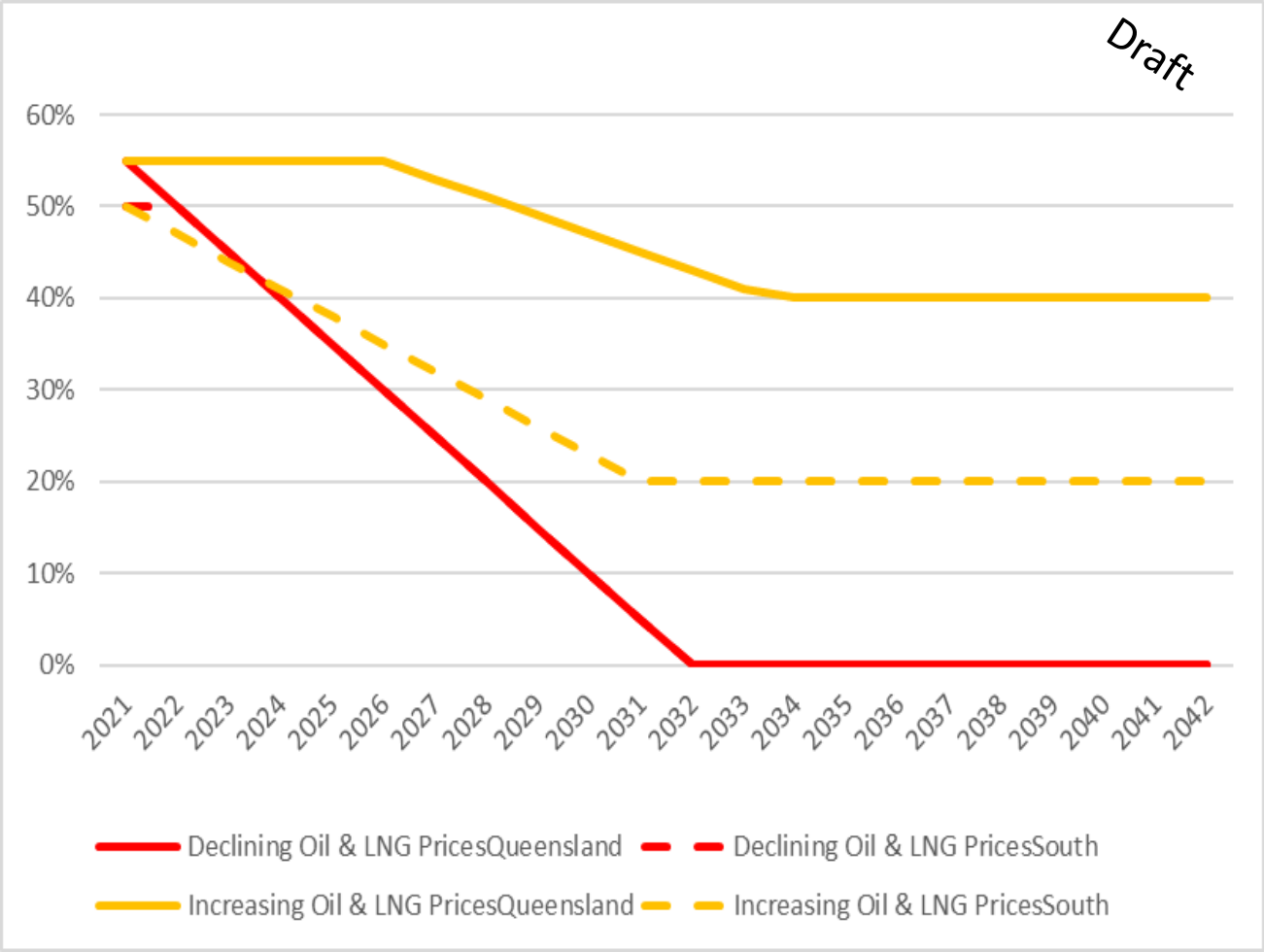
Data Sources

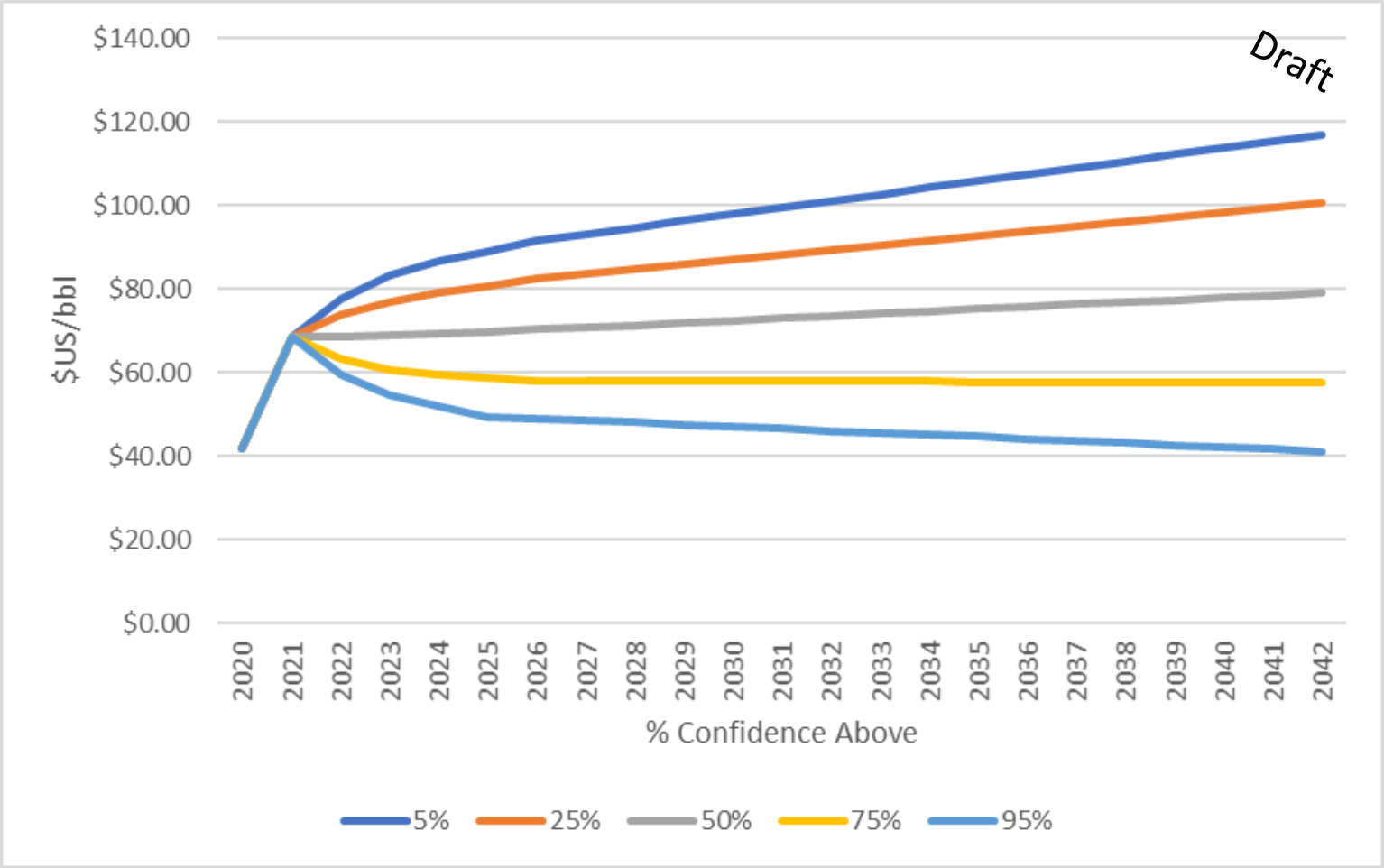
Economic Indicators	BIS Oxford Economics (via AEMO)
Gas Reserves/Resources	ACCC Gas Inquiry, 2021
Gas Production Costs	2021 GSOO (To be updated)
Gas Transmission Costs	ACCC Gas Inquiry, 2021
Global LNG production costs, incl shipping	McKinsey, Setting the Bar for Global LNG Cost Competitiveness
Domestic gas demand	AEMO scenarios applied in this study
Global LNG demand	International Energy Agency (IEA), World Energy Outlook 2021 Oxford Institute for Energy Studies (OIES), Modelling the impact of Natural Gas
Oil (Brent) and LNG (Japan spot) prices	IEA, Monthly Oil Prices Statistics METI, Japan spot LNG prices

Additional Material

Oil indexation values applied to Gas price forecasts

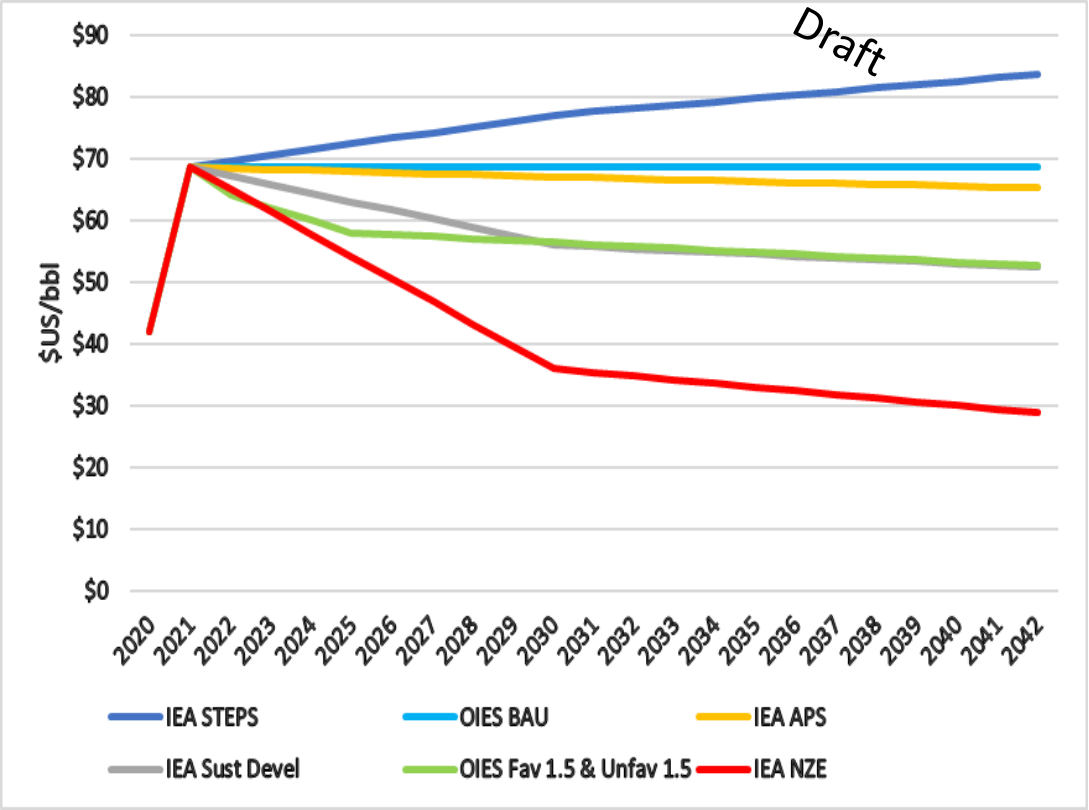


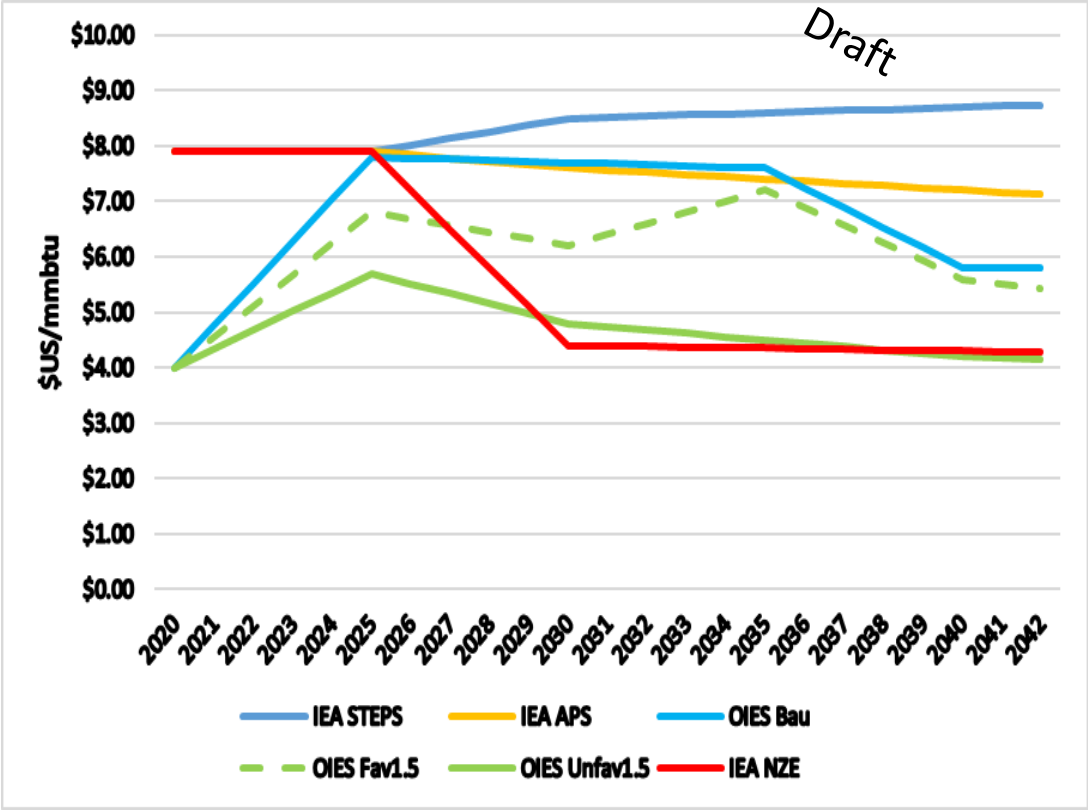
LGA's Oil Price Forecast



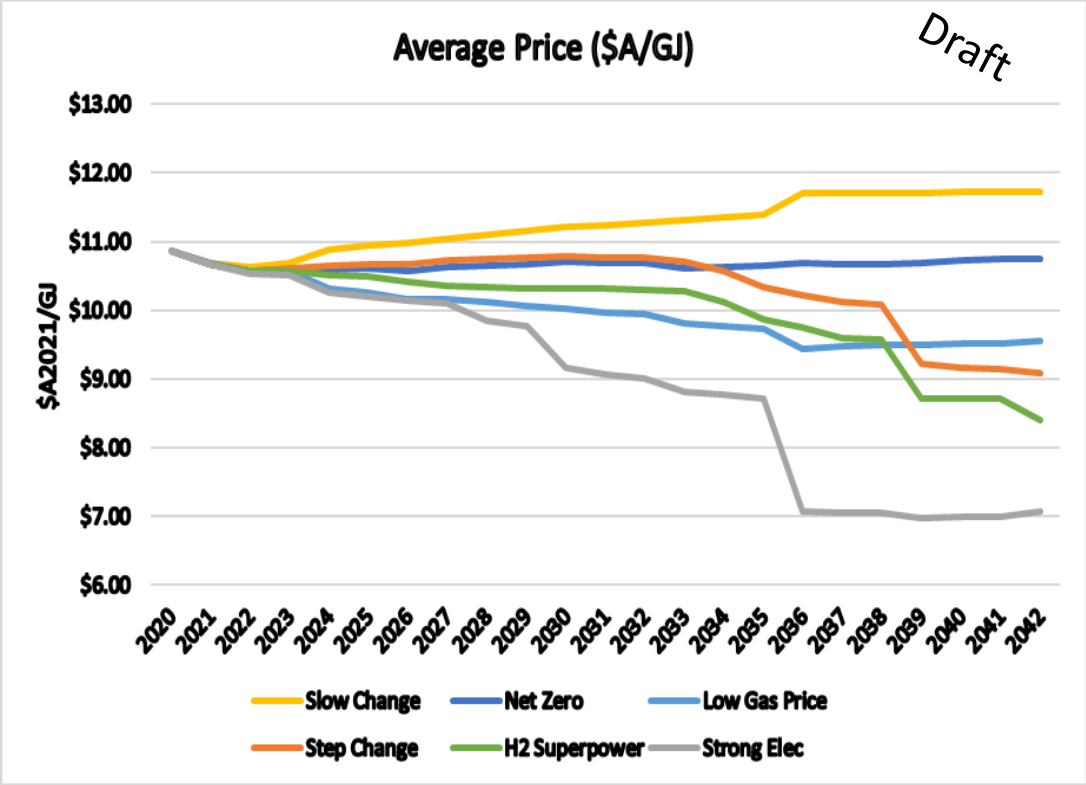
Oil Price Scenario	Applied in which scenario?
5%	None
25%	Slow Change
50%	Net Zero, Low Gas Prices
75%	Net Zero, Hydrogen Superpower
95%	Strong Electrification

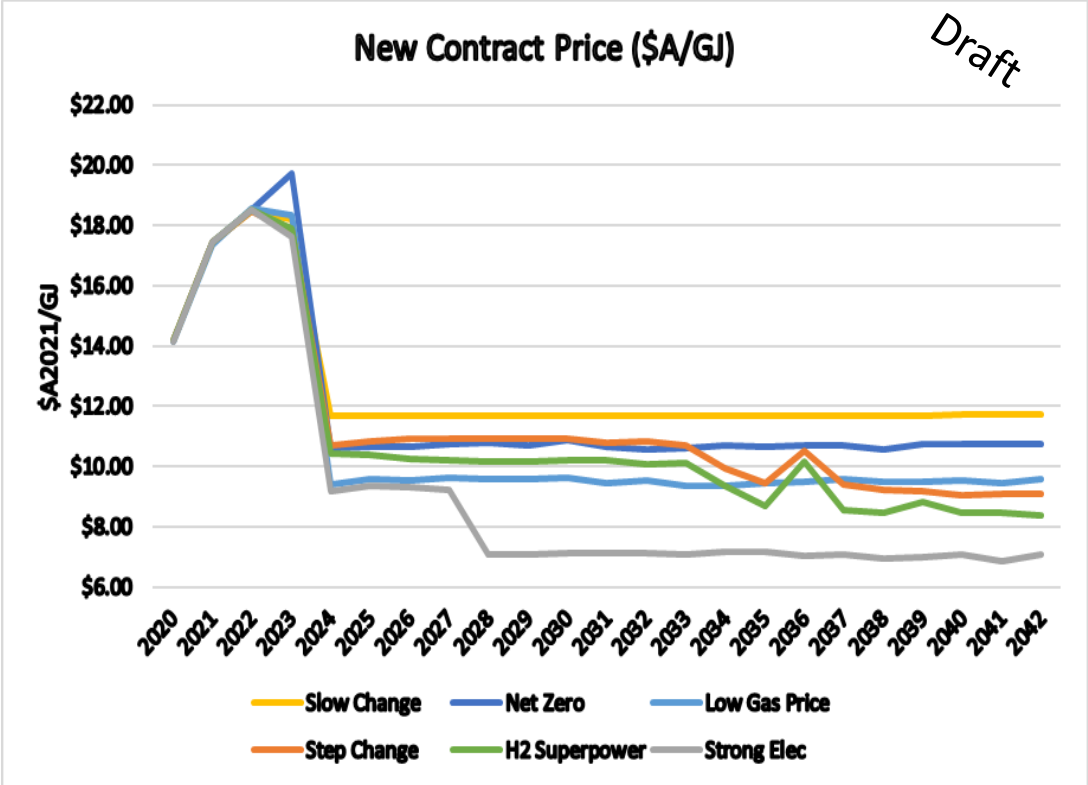
Declining Oil (Brent)and LNG (Japan Spot) Prices due to Decarbonisation – 3rd Party Projections



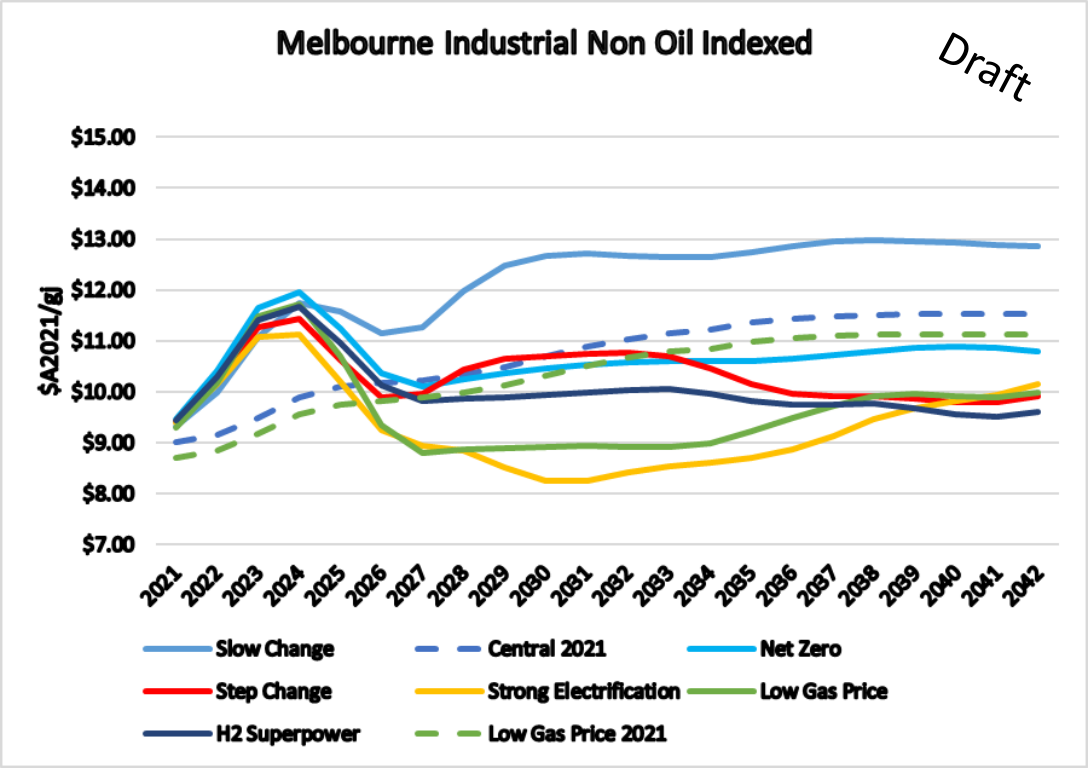


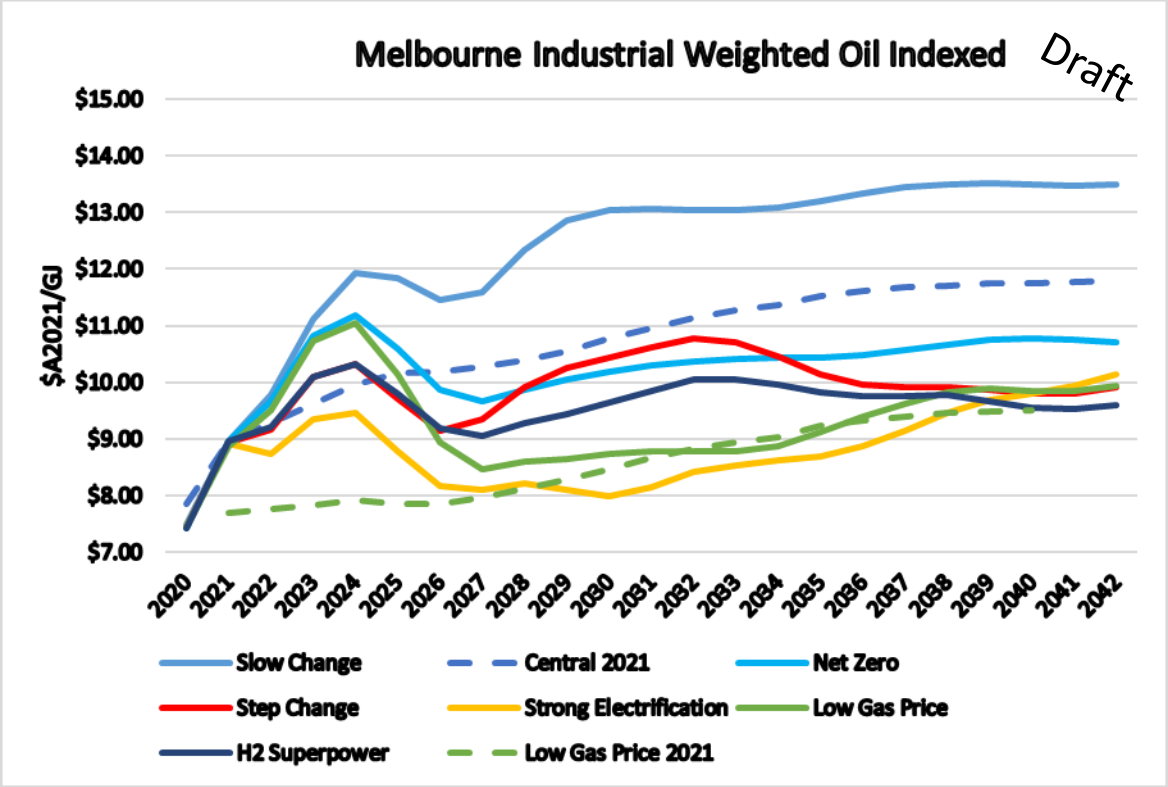
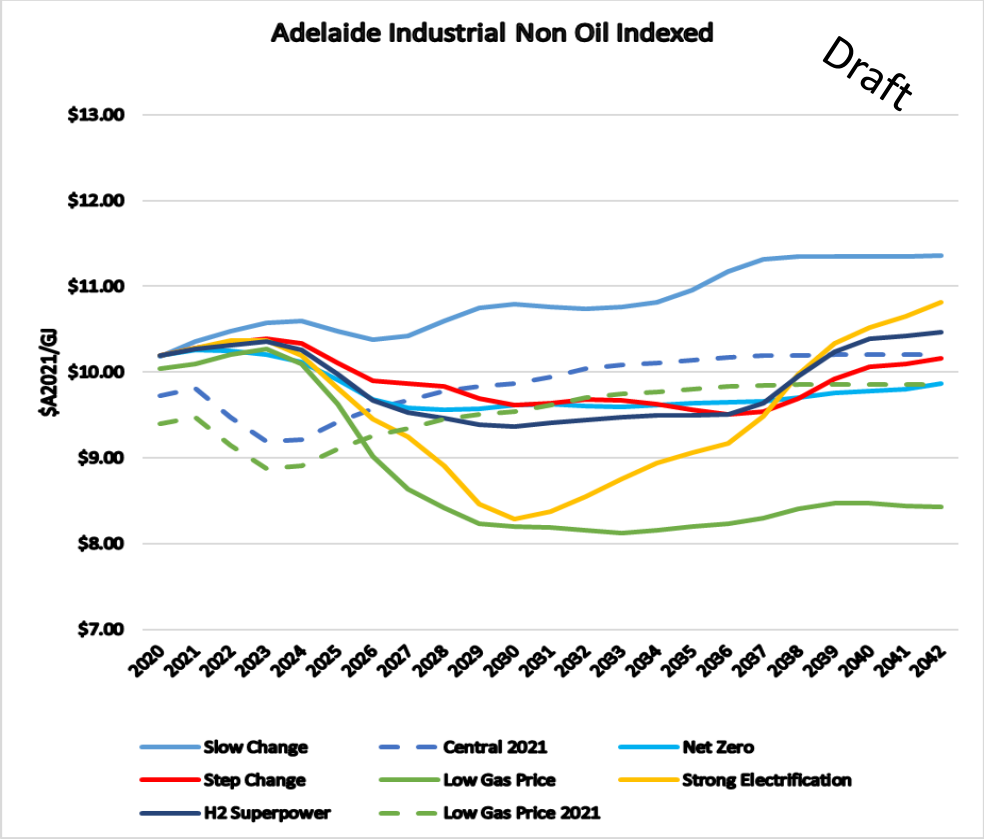
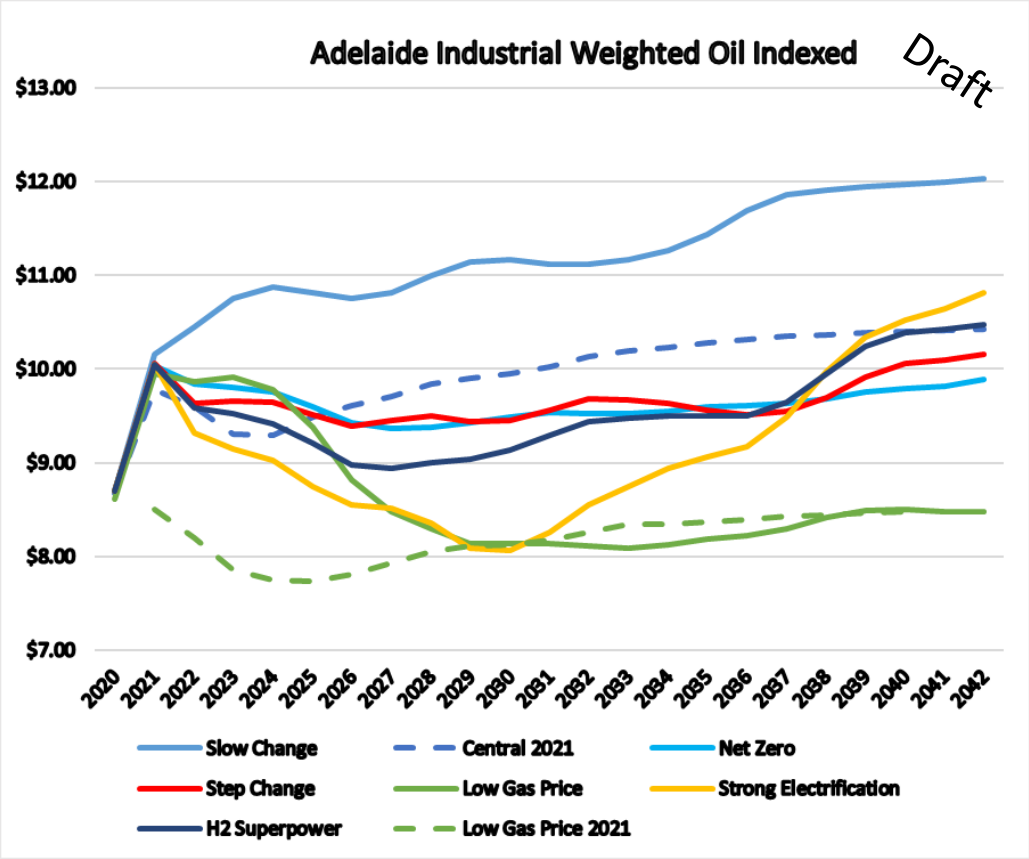
Modelled LNG Prices Replicate 3rd Party Projections





Melbourne prices respond to lower domestic costs and lower global prices





Adelaide prices also respond to lower domestic costs and lower global prices