Electricity Market Update:

October 2022

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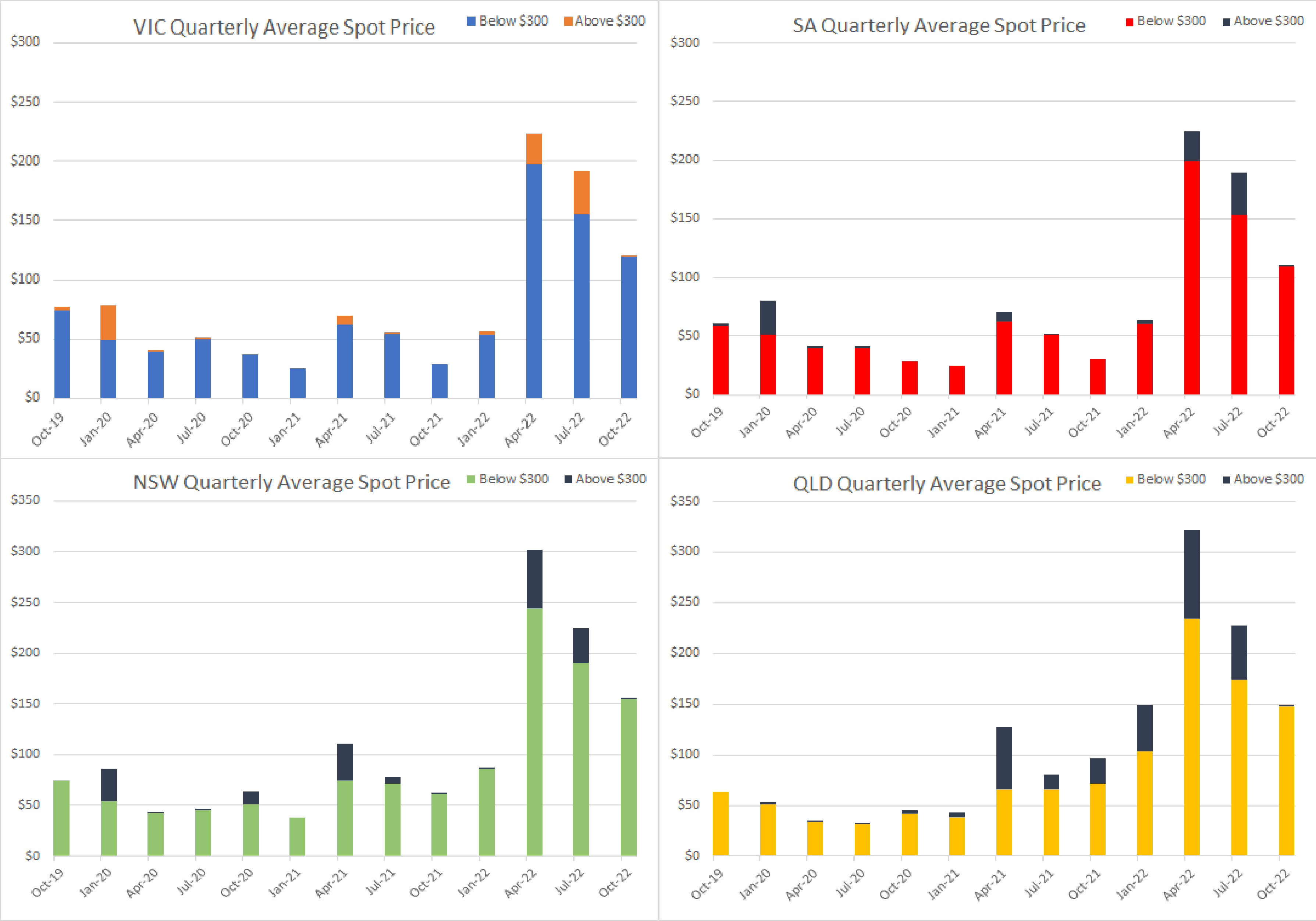
2022 YTD Spot Summary

Q122 – *mild summer but strong prices regardless*

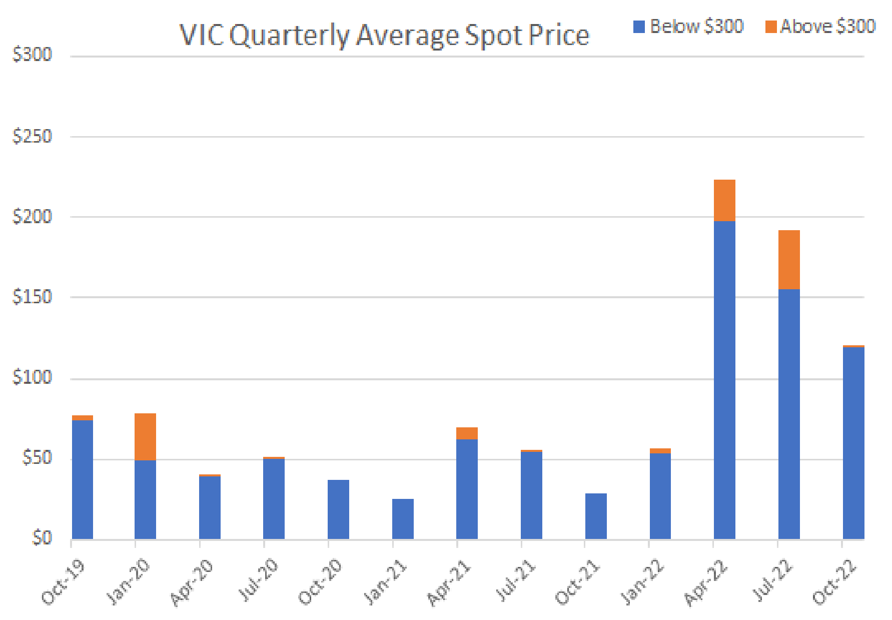
- La Nina conditions meant a relatively wet and mild summer demand wise
- However stronger prices in the northern regions driven by multiple baseload outages, NSW coal pricing higher to reflect scarcity, and transmission limitations from Victoria
- NSW price approximately doubled Q1 21 despite almost identical demand
- Despite the underlying strength volatility was extremely limited except in Qld which had close to seven hours MPC equivalent between Feb 1st and 2nd
- VIC settled $56.70, SA $70.61, NSW $87.09 and QLD $149.52

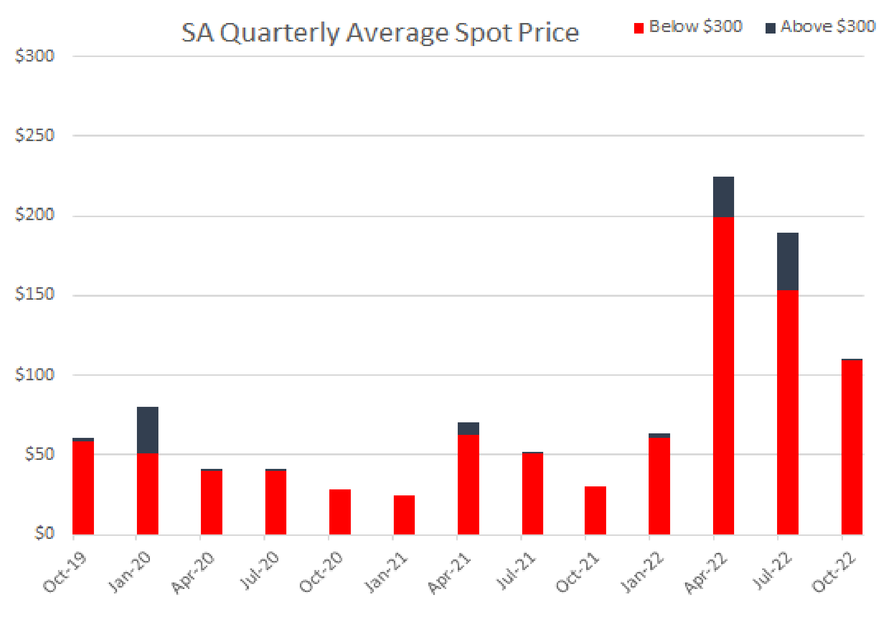


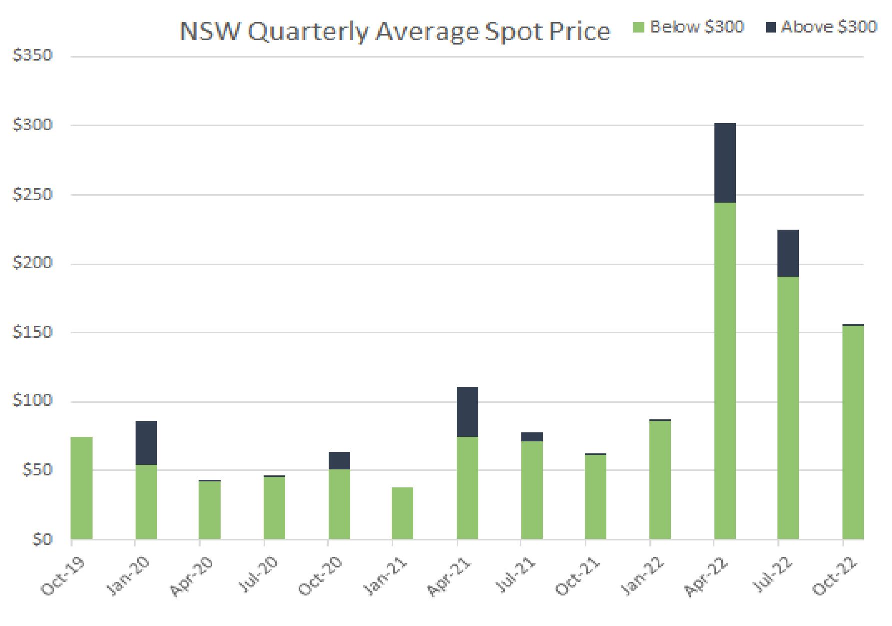
2022 YTD Spot Summary

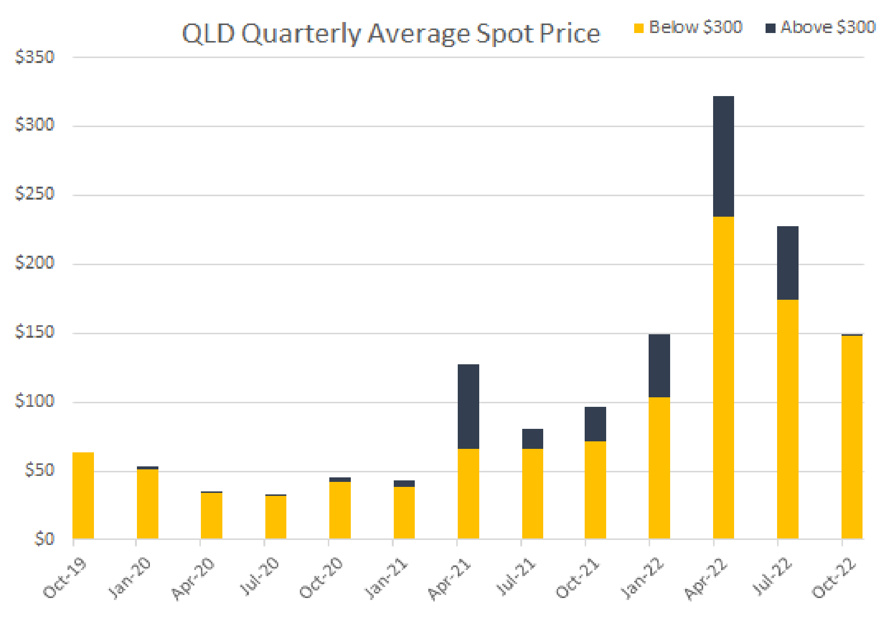
Q222 – *market chaos*

- High baseload outages and fuel scarcity lead to high spot prices in electricity & gas markets, triggering automatic application of administered price caps (APC)
    - Victorian Gas Market from 30 May;
    - All NEM regions over 12-13 June;
    - Separately, gas prices in the Short Term Trading Market (STTM) hubs of Sydney and Brisbane were also capped from 24 May to 7 June under the operation of Retailer of Last Resort (RoLR) provisions, after suspension of a trading participant retailer.
    - Sydney STTM hub prices were also capped between 8 June and 14 June when high price thresholds were breached
- As regions were administered generation volumes offered into the spot market began to drop. The scale of interventions needed to manage the extent of reserve shortfalls led AEMO to suspend operation of the NEM spot market in all regions between 15 June and 24 June, when full spot market operation recommenced.
- While there was MPC events in Q2, a large portion of the cap accumulation was spot pricing settling between $300-$1000 consistently 24/7
- VIC settled $223.90, SA $256.29, NSW $301.94 and QLD $322.66





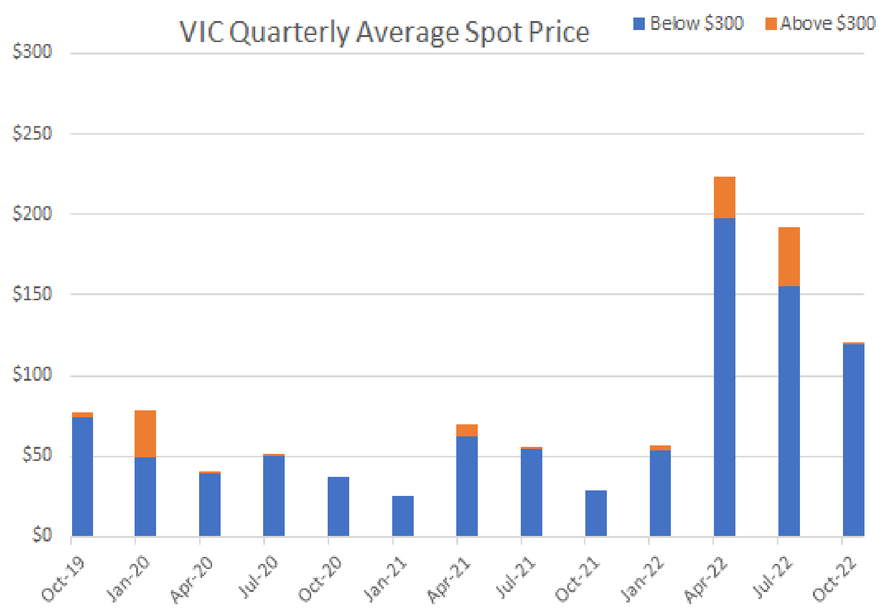


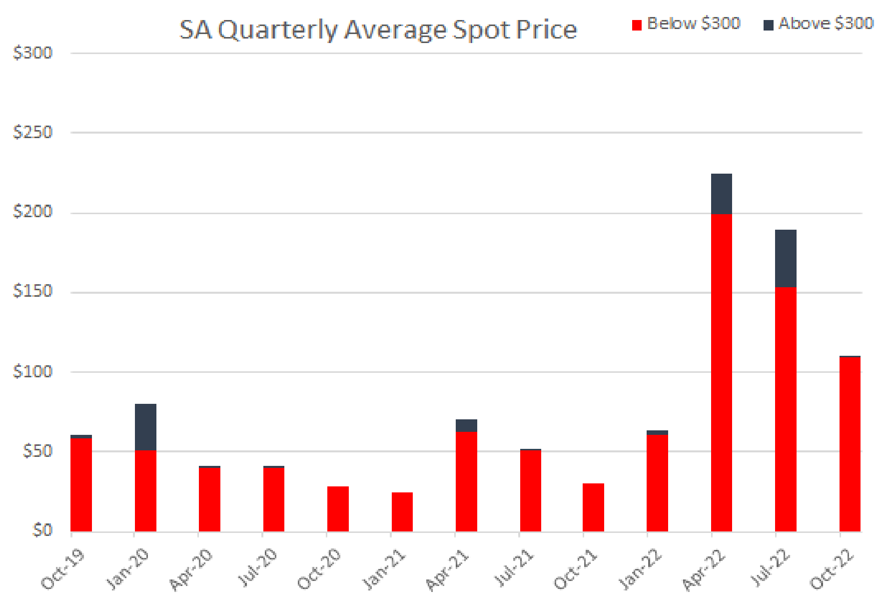


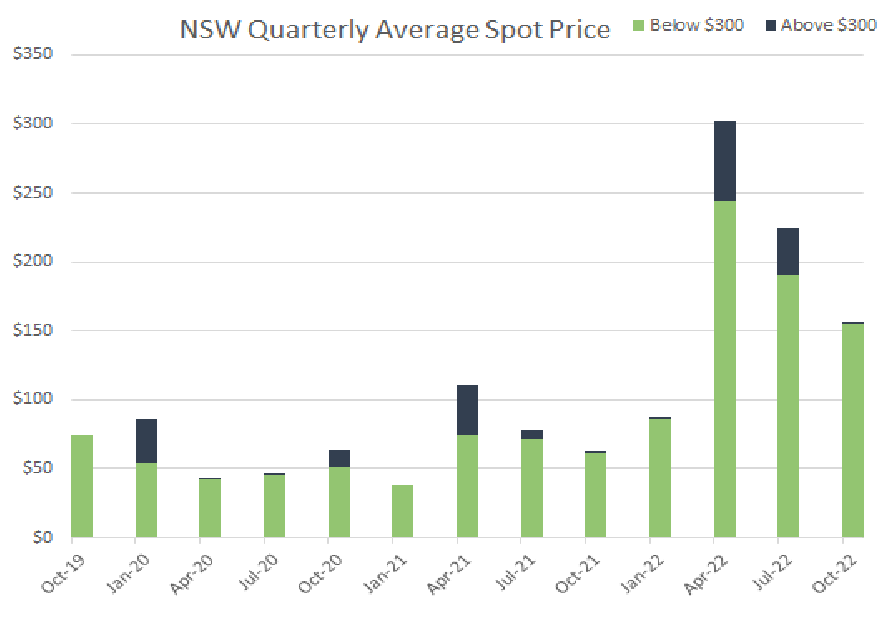
2022 YTD Spot Summary

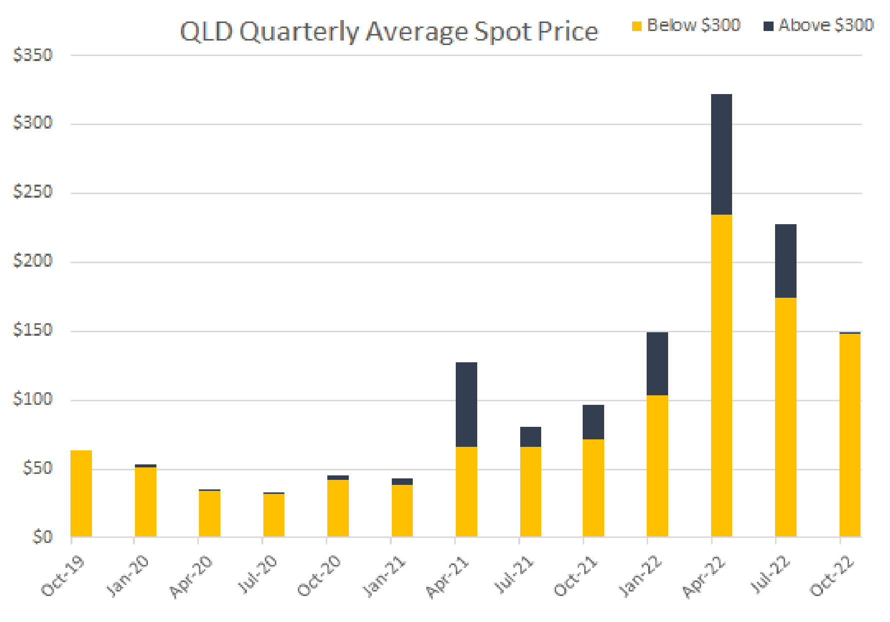
Q322 – *high prices continue*

- Drivers similar to Q2 scarcity of black coal and gas and international price reflective replacement costs
- Qld volatility July 4th and 5th which combined with the strong underlying had cumulative price desperately close to once again exceeding the threshold
- Wholesale gas price outcomes trebled vs the same time last year (~$20/GJ) and significantly higher than previous records
- For the first time AEMO took the step of issuing a threat to system in the Victoria Gas Market (DWGM) on the basis IONA storage was at risk at going below minimum levels
- On the flip side despite all these highs the impact of renewables was in lights in September with new minimum demand records set for the system, Vic and NSW and in August in Qld on sunny periods
  - At one stage wind and solar was supplying 62% of the system demand
- VIC settled $191.96, SA $232.07, NSW $225.28 and QLD $228.14



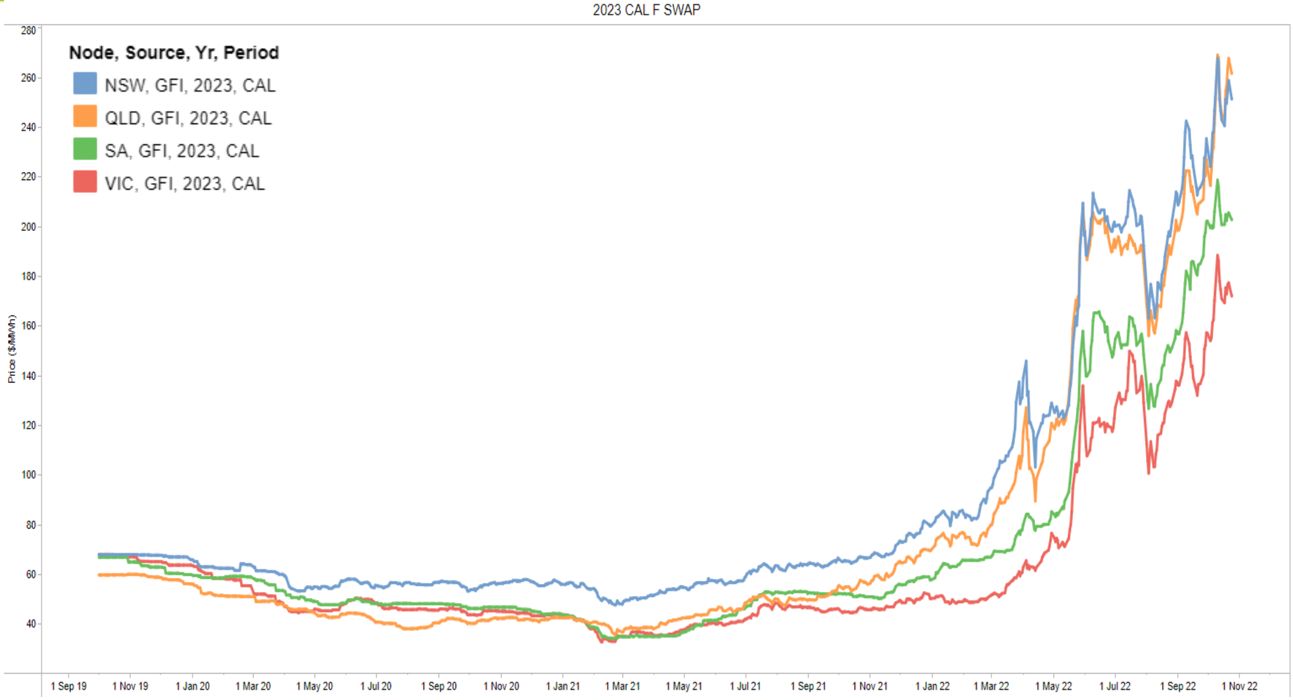


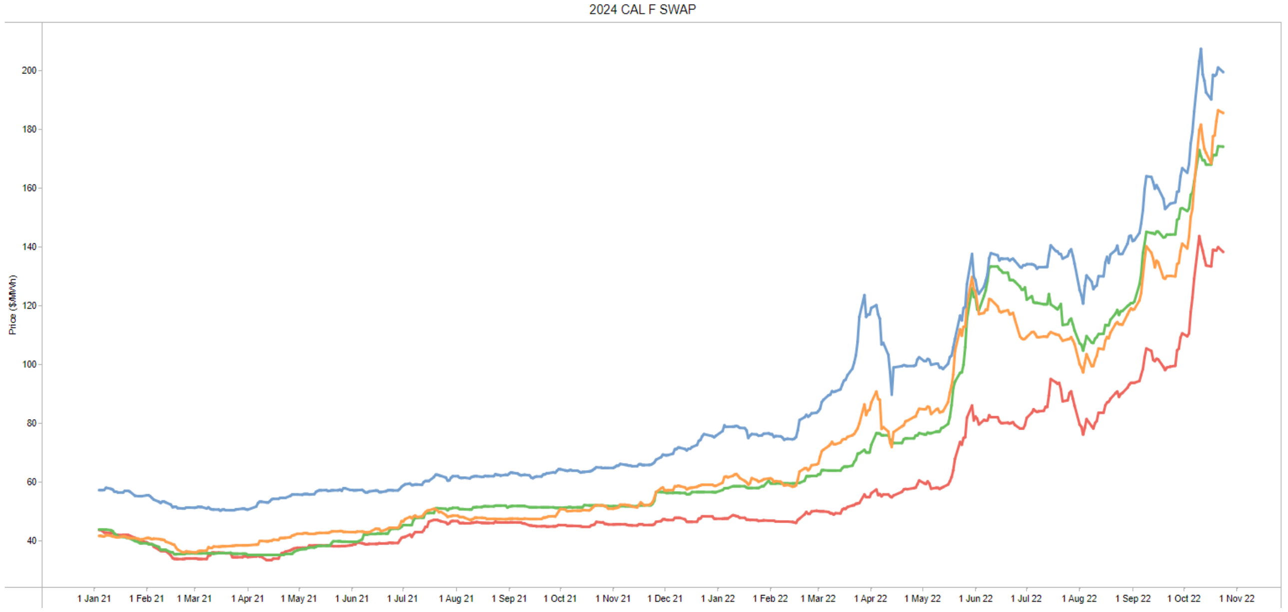




Forward Market Dynamics

- Forward prices have risen sharply as fuel scarcity compounded existing concerns around plant reliability
    - Beginning of hostilities in the Ukraine and subsequent Russia-EU gas dispute exacerbated fuel concerns as LNG/gas and coal prices rose sharply which flowed to domestic markets as fuel sources required international parity prices to service domestic needs
    - Q223 was the lowest black coal generator output on record
- Sharp rises in forward prices in turn reduced market liquidity even further as futures margins requirements increased, reducing participant activity and increasing volatility
    - $30 moves in contracts were observed from single MW trades!
    - ASX reporting from 30th June indicated some $4bn held in margins requirements from biggest NEM generators/retailers – likely much higher again now
    - OTC transactions as % of market share has increased but still overall low as previous OTC transactions likely deep ITM and eating up existing credit limits
- Reduction in liquidity from margins and increased volatility likely also further compounded liquidity issues as VaR limits are stretched and even traders without margins issues are forced to limit size of positions
- Inter-temporal spreads have widened dramatically between Cal23 vs 24 & beyond (up $70+ in QLD for instance for Cal24, $125 vs Cal25) indicating the market sees these concerns as mostly short term issues
    - Trading out to Cal26 has happened indicating both sellers happy to sell at current elevated levels and buyers buying value relative to Cal23
- Forwards currently for Cal 23 is trading in VIC at ~$172, NSW at ~$252, SA at ~$210 and QLD at ~$261





Other Market Events/Issues

- ROLR events
  - Pooled Energy – 24 May
  - Weston Energy – 31 May
  - Enova Energy – 22 June
  - Power Club – 12 July
  - Mojo Power East – 27 July
  - Social Energy Australia – 24 August
  - Elysian Energy – 1 September
  - Issues of retailers ROLRing (or doing so in all but name) customers but keeping their hedges and selling at a profit have re-emerged, though this is not a new concept (LPE and ReAmped)
- APC change
  - Alinta have advocated for APC to be raised from $300 to $600
  - AEMC position currently for APC to be raised (if approved) from 2025
  - Delays in decision making will affect market liquidity as generators unlikely to sell caps while APC is uncertain
- Futures clearing/margins
  - Margins requirements for market participants from high prices have been a key issue especially for generators where prior hedges would be deep in-the-money
  - Concerns for market liquidity and retailer risk management as there is now only one clearer (Macquarie Bank) and they have advised they are not taking on new customers

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Other Market Events/Issues cont

- Vic Storage Target
  - Vic Government announced it would look to legislate energy storage targets on 27 Sept
  - Targets will be both short (battery) and long duration (pumped hydro) systems, with 2.6GWs by 2030 and 6.3GW by 2035

- VRET 2
  - 6 projects totalling 623MWs received contracts announced 7 Oct
  - All projects were solar, and 4 contained battery systems totalling 600MWh of storage (1-2 hours)

- SECV 2.0
  - Publicly owned VIC state generator with focus on renewable energy to replace Loy Yang A announced 20 Oct
  - $1bn to deliver 4.5GWs of wind & solar over 10 years
  - VIC state government to own 51% with the government stating a preference for pension funds to own the remainder
  - Government also left the option of entering the retail sector open

Key drivers affecting future price outcomes

- Ageing thermal fleet suffering more outages or early closure
- Fuel concerns continue
  - Oil, gas, coal driven from situation in Europe
- Contract liquidity
  - Margins/VaR
  - Changes in hedging profile
- Technical challenges for the grid with addition of large amounts of VRE

$ UP

$ DOWN

- Influx of new renewable generation, both large-scale and household PV
- Fuel inputs become cheaper
  - Europe situation improves
  - Government intervention (domestic reservation of coal/gas)
- La Nina resulting in another wet and mild summer

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