



Introduction to the Australian Electricity Market

Review of FY2021
ASX Energy

ASX Australian Futures Market – FY 2021

Key Facts

620% of underlying power consumption

ADV is 4.2TWh / 1,929 contracts

Over \$49 billion face value p.a.

1,071 TWh p.a.

Growth of the Electricity Futures Market

Listed since 2002

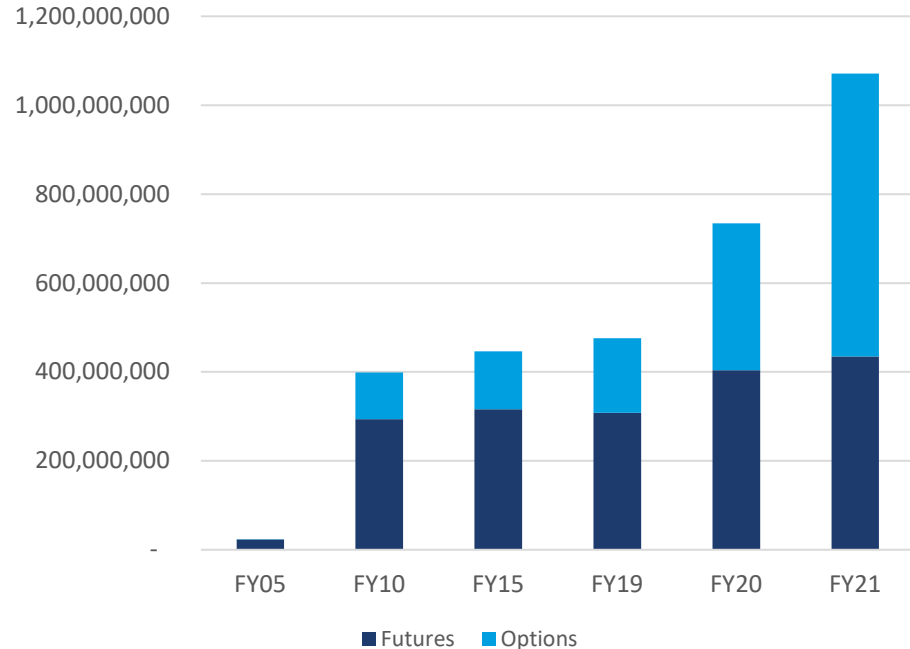
Key Features

- **Centrally Cleared and Cash Settled** - CFTC approved.
- **Variable Tick Size** – Contract size varies on the number of hours/days in a contract period.
- **Defined Spreads** – spread trading functionality to trade inter-commodity spreads (e.g. Caps and Swaps).
- **Initial margin concessions** – inter-commodity concessions applied for offsetting positions held in Swaptions and Swap Futures.

Key Benefits

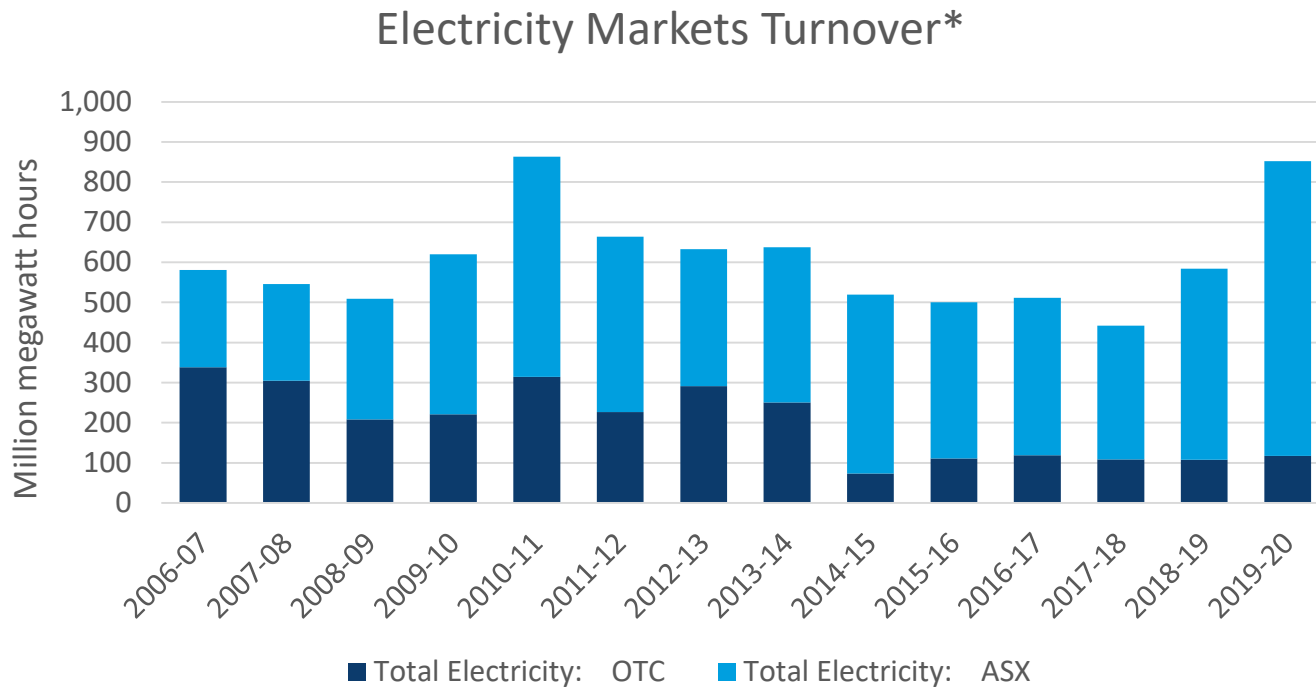
- **Price transparency and liquidity** (with official market makers in specific regions).
- **Reduction of counterparty credit risk.**
- **Centralised clearing support.**

Australian Electricity (MWh)



Growth of the Electricity Futures Market

OTC volume vs. ASX traded volume



The National Electricity Market (NEM)

Operated by AEMO

The Au Electricity Market Pool Price

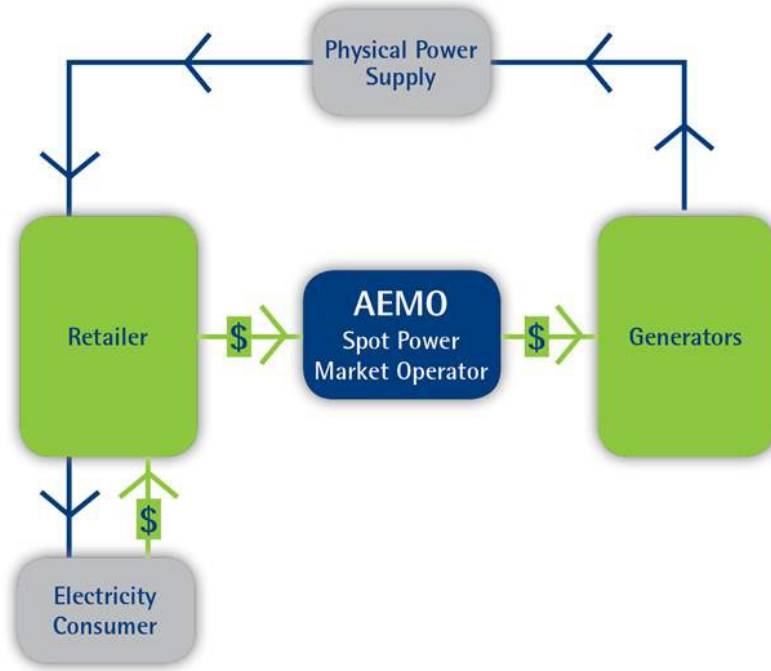
The National Electricity Market (NEM)

- **ASX futures for each region are cash settled against the electricity Pool Price average**
- The Australian NEM is an interconnected grid including NSW, QLD, Vic, SA and Tas.
- The Australian Energy Market Operator (AEMO) is the pool market operator. AEMO publishes a half hourly electricity pool price for each region.
- All hedging by energy companies must be done via cash settled derivatives (such as futures). No electricity derivatives involve physical delivery of energy.
- In each region:
 - Retailers purchase power from AEMO at the common pool clearing price
 - Generators sell power to AEMO at the common pool clearing price
- The AEMO spot pool price varies from $-\$1,000/\text{MWh}$ to $+\$15,100/\text{MWh}$



The Physical Flow of Electricity Bought and Sold from the Pool Market

The NEM



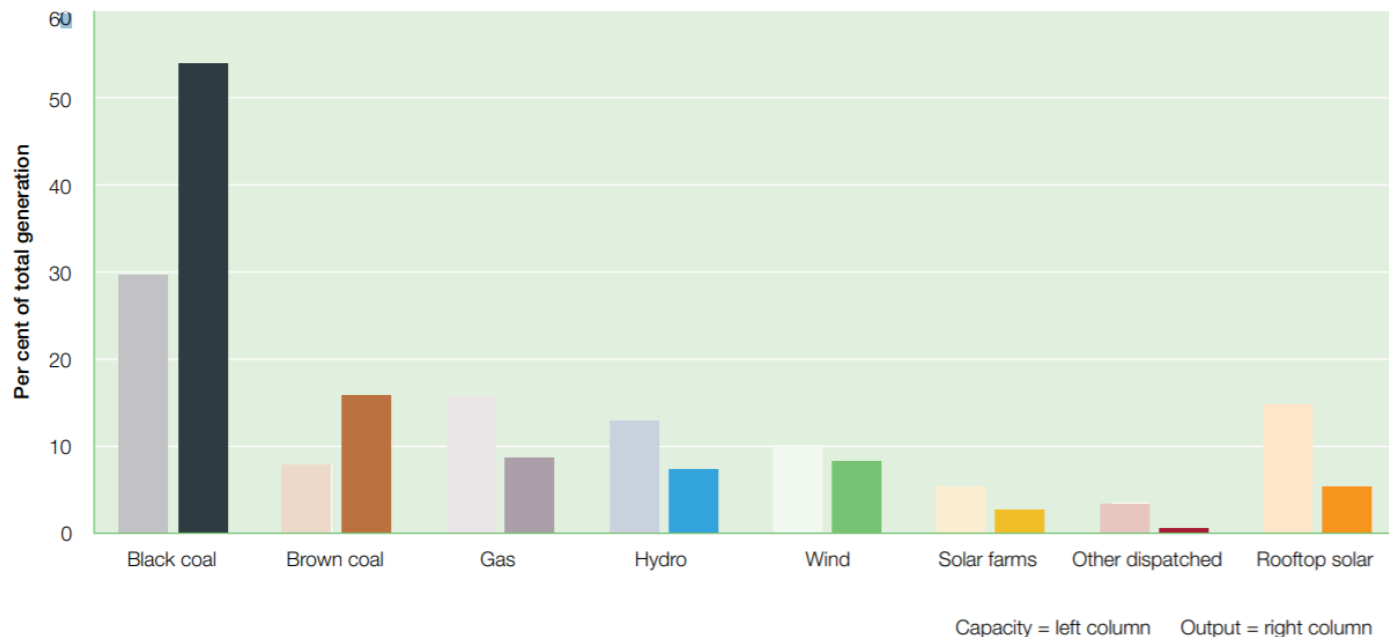
- The pool price is calculated by AEMO and changes every half hour (ranges between $-\$1,000$ to $+\$14,5000/\text{MWh}$).
- All retailers pay the variable pool price to AEMO.
- All generators receive the variable pool price from AEMO.
- Consumers typically pay their retailer a fixed rate (including retailer's profit margin), in return for power supply.

Generation in the NEM, by fuel source

Extract from AER State of the Energy Market report 2019

Figure 2.4

Generation in the NEM, by fuel source, 2019



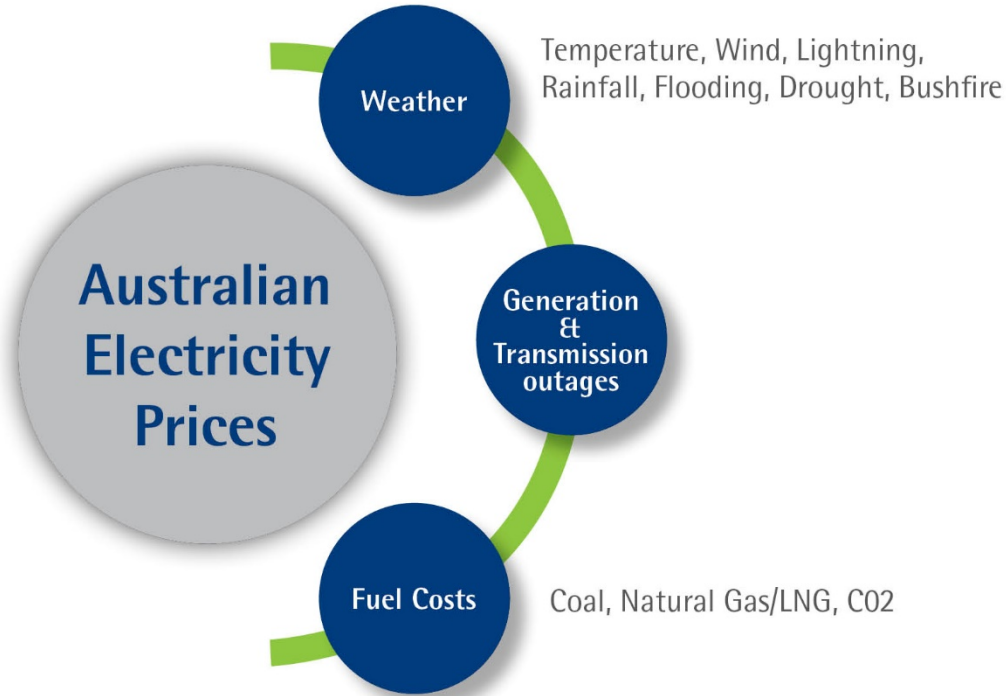
Free Real-time Spot Market Information

Useful links

1. AEMO Data Dashboard - <http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Data-dashboard>
2. 7-day forecast of the “Scheduled Reserve” - <http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Data-dashboard#7-day-outlook>
3. Free government weather service - <http://www.bom.gov.au/australia/majorcities.shtml>

The Financial Electricity Market

Fundamental Futures Price Drivers



The ASX Energy Product Suite

Commodity	Product Type
1. Australian Electricity	<ul style="list-style-type: none">• Base Load Month Futures (EN, EQ, ES, EV)• Base Load Quarter Futures (BN, BQ, BS, BV)• Peak Load Quarter Futures (PN, PQ, PS, PV)• Base Load Quarter \$300 Cap Futures (GN, GQ, GS, GV)• Base Load Strip Options (CY/FY) (HN, HQ, HS, HV)• Base Load Quarter Average Rate Options (BN, BQ, BS, BV)
2. Australian Natural Gas	<ul style="list-style-type: none">• Victorian Natural Gas Quarter Futures (GX)• Victorian Natural Gas Strip Futures (GY)• Wallumbilla Natural Gas Month Futures (GJ)• Wallumbilla Natural Gas Quarter Futures (GK)
3. New Zealand Electricity	<ul style="list-style-type: none">• Base Load Month Futures (ED, EH)• Base Load Quarter Futures (EA, EE)• Peak Load Quarter Futures (EC, EG)• Base Load Strip Options (CY/FY) (EB, EF)• Base Load Quarter Average Rate Options (EB, EF)

Summary of ASX Au Electricity Futures Market

Underlying Commodity	Electrical Energy Bought & Sold in the NSW, VIC, SA and QLD Wholesale Pool Markets Conducted by AEMO
Contract Quarters	March (H), June (M), September (U), December (Z). Individual month contracts also available.
Cash Settlement Price	The arithmetic average of the NEM final base load half hour spot prices during the Contract Quarter, rounded to 2 decimal places. A Provisional Cash Settlement Price will be declared on the first Business Day after expiry of the Contract and shall be later confirmed on the 3 rd Business Day after expiry.
Trading Hours	10:00-4:00pm, Sydney, Australia Time (AEST) Block Trade Agreement permissible at any time other than the pre-open period (9:45am-10:00am on Exchange business days)
Base Load Contract Unit	1 Megawatt of electrical energy per hour based on a base load profile. Where the base load profile is defined as the NEM base load period from 00:00 hours Monday to 24:00 hours Sunday (AEST) over the duration of the Contract Quarter. The size (in Megawatt hours) of each Contract Quarter will vary depending on the number of days and base load hours within the quarter.
Peak Load Contract Unit	1 Megawatt of electrical energy per hour based on a peak load profile. Where the Peak Load profile is defined as the NEM Peak Load from 07:00 hours to 22:00 hours (AEST) Monday to Friday (exc. Public holidays, as determined and published by ASX 24) over the duration of the Contract Quarter.

Types of Users



End Users/Producers

- > Generators, Retailers, and Gen-tailors
- > Physical suppliers/users of electricity and will use futures to **hedge**
- > Removing **price fluctuation** risk
- > Removing **counterparty risk**



Banks

- > Banks loan money to various market players eg **Inventory financing** is where money is lent and secured against an expected later pay back. The payback can be guaranteed with Futures
- > Banks might offer OTC products that they will then hedge with Exchange futures.

Types of Users



Managed Funds and Hedge Funds

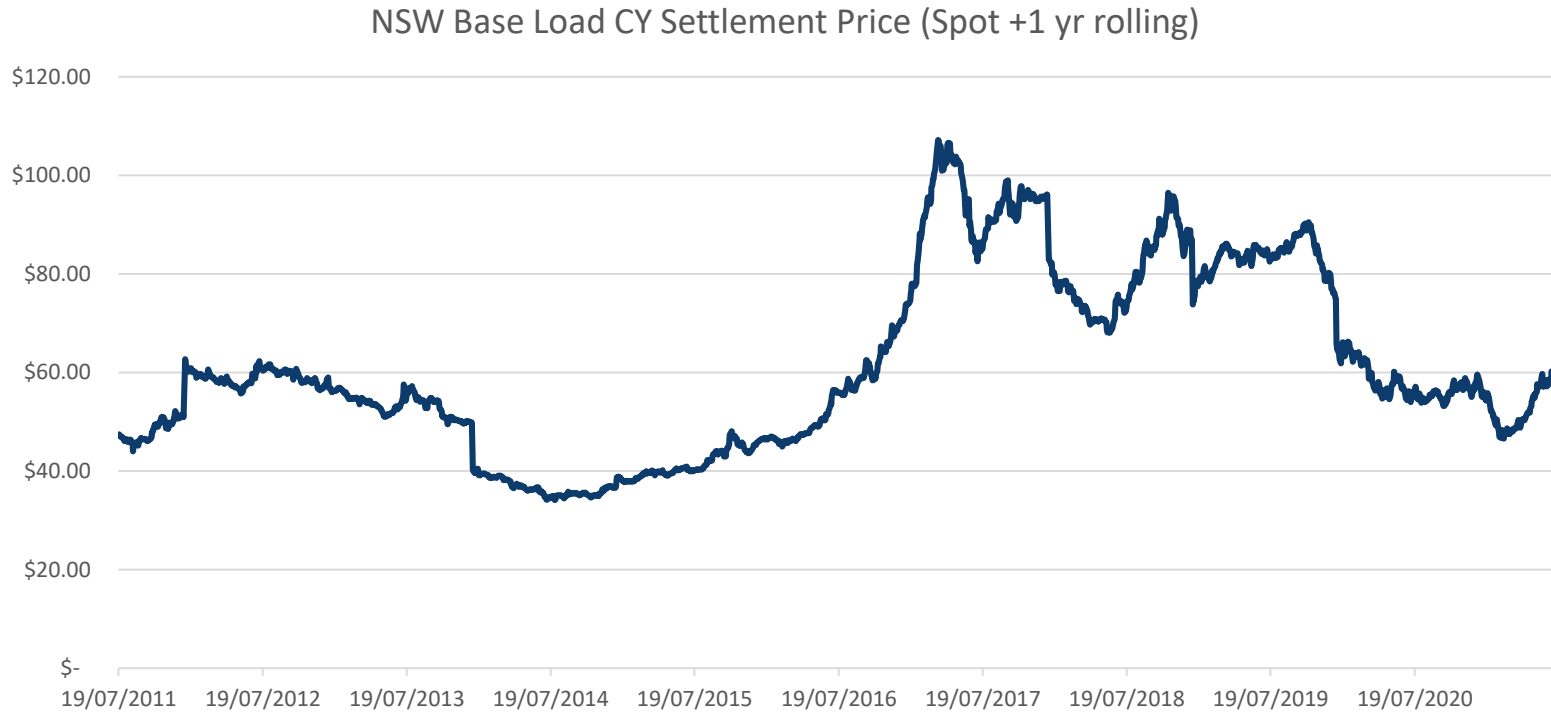
- > Invest in projects for future return. Risk can be offset with Futures
- > Ability to speculate on future price direction



Brokers

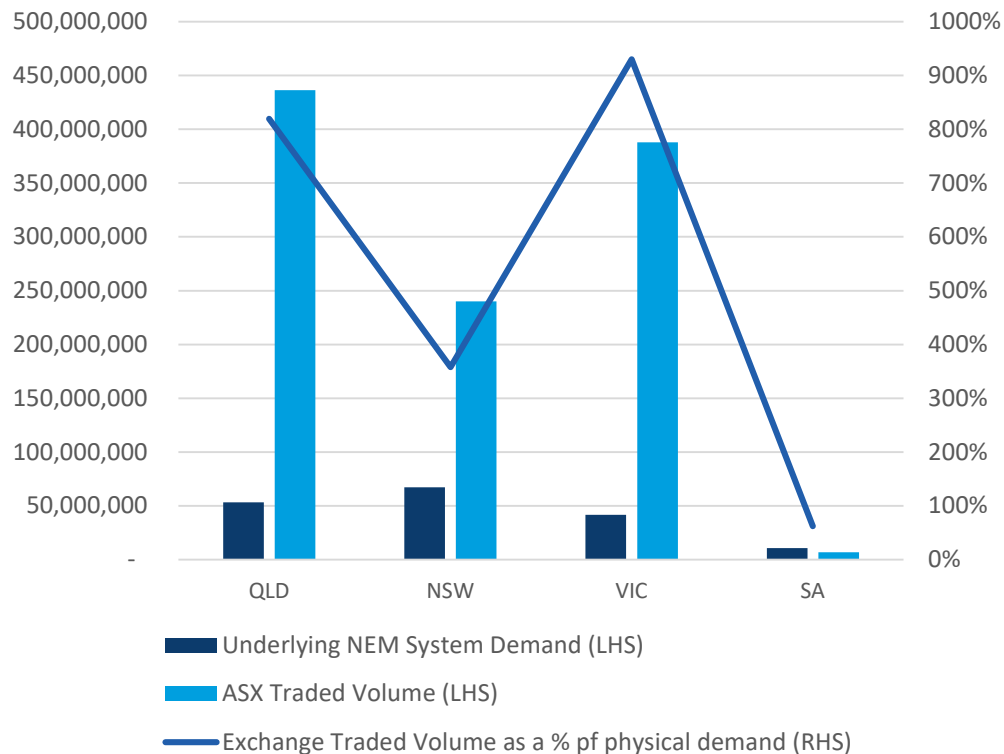
- > Facilitate trade, both OTC and Exchange
- > Bring clients together

10 years of futures price history (1 year rolling)



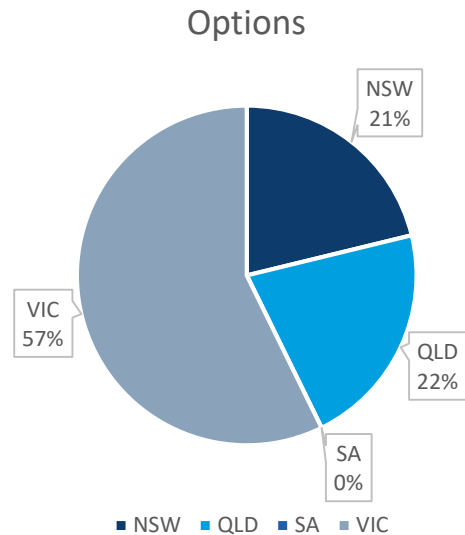
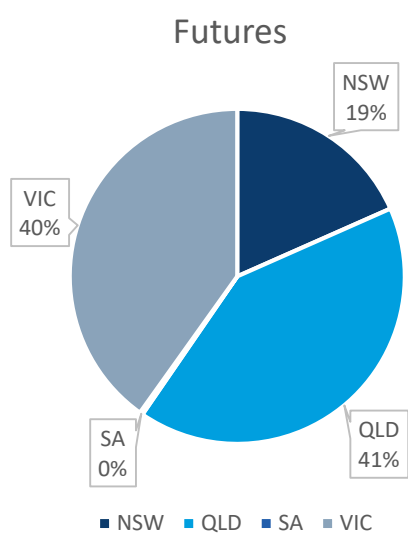
ASX Liquidity by Region compared to the Physical Market

FY 2021



ASX Futures & Options Liquidity

FY 2021



ASX Energy Historical Data

ASX Energy provides an online subscription based Data Centre which contains:

- Historical futures and options settlement prices and volumes
- Full trade log history
- Daily Settlement Price, Open Interest and Trade log files

To view sample files please go to https://www.asxenergy.com.au/products/data_centre/daily-files.

AU Energy annual subscriptions begin at A\$4,395+gst and NZ Energy subscriptions begin at \$1,995+gst.

Please click here to start your free 30 day trial period <https://www.asxenergy.com.au/subscribe>.

Some useful ASX links and industry reads

- Free intraday prices (20 min delayed): https://www.asxenergy.com.au/futures_au
- Free daily trade log: <https://www.asxenergy.com.au/trades>
- Free daily Block Trade publication and alerts: <https://www.asxenergy.com.au/custom>
- Weekly Market Wrap newsletter: https://www.asxenergy.com.au/newsroom/market_wrap
- Australian Energy Regulator annual “State of the Energy Market Report”: <https://www.aer.gov.au/publications/state-of-the-energy-market-reports>
- Australian Financial Markets Association annual report: <https://afma.com.au/annual-report>

Getting Access

ASX 24 Clearing Participants supporting Au Electricity

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Getting Access

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Thank you.

