Quarterly Energy Dynamics
Q4 2018
Market Insights
Record Q4 NEM electricity prices

Summary

A  Highest Q4 average spot electricity prices on record in all regions except TAS

B  High prices occurred despite: average demand for the quarter falling to lowest level since 2002; and a lack of high spot prices above $300/MWh

C  NEM-wide factors contributing to higher prices included:
   1)  Shift in offers from baseload and mid-merit GPG
       •  GPG set the price more often and at higher prices than in recent quarters
   2)  Structural shift of offers from black coal-fired generators to higher prices between 2014 and 2018, as well the progressive closure of approximately 4,000 MW of coal-fired capacity between 2013 and 2017
   3)  GPG and coal-induced rises somewhat offset by increased variable renewable penetration
Summary

A  Steady decline in GPG continued: lowest quarter since 2006 (effectively lowest on record for the current fleet).

B  New VRE capacity commenced generation this quarter (~800 MW), contributing to increased output compared to Q4 17.

C  Outages of units at Yallourn and Loy Yang A power stations contributed to lowest brown coal-fired generation quarter on record.
Gas-powered generation’s decline continues

Summary

A  Continuation in decline in electricity supplied by GPG, reducing to lowest level since 2006.

B  A ~50% reduction in GPG capacity offered below $100/MWh. Also a 41% in reduction in ‘minimum generation’ offers.

C  Contributors to reduced GPG include: increased variable renewable energy (VRE) penetration; high domestic and international gas prices; high hydro output in 2018.
Gas’ price-setting role increases

Summary

A Black coal-fired generation still the dominant price setter in the NEM: more than 60% of the time in NSW & QLD, and ~40% of the time in VIC & SA. Most frequent price setters were Gladstone (11%), Bayswater (10%) and Stanwell (9%) power stations.

B GPG set the price more often in every region compared to Q4 2017 and Q3 2018. GPG also set the price at higher levels: for example, when GPG set VIC’s price it averaged $115/MWh compared to $91/MWh in Q4 2017.

C During the off-peak, when demand is typically lower, black coal is typically the price setting fuel.

D During peak periods, when demand is highest, gas and hydro are the marginal generators the majority of the time.
Open NEM: inter-regional transfers reduce

Summary

A  
A 29% reduction in NEM-wide inter-regional transfers compared to Q3 18  
• Lowest quarterly transfers since Q1 16 (when there was a major outage of Basslink)  
• Drivers: generator outage patterns; fewer periods of high wind output in VIC and SA; shifts in regional demand; and reduced TAS output.

B  
Interconnectors rarely constrained – lowest amount in the history of the NEM.  
• Electricity price convergence across some regions (e.g. VIC & SA)  
• More inter-regional price setting

Quarterly inter-regional transfers

Time interconnectors binding at limits

Average flows (MW)

Net Flows
Q4 17
Q3 18
Q4 18

NSW-QLD
VIC-NSW
VIC-SA
TAS-VIC

% of time constrained

QNI
Heywood
VIC-NSW
Basslink

Q4 2017
Q3 2018
Q4 2018
Storage utilisation increases

Quarterly pumping/charging in the NEM

Park spread by storage technology

Summary

A
Pumping load was approximately 51% higher than the prior quarter and 79% above Q4 2017, and the highest level since 2008. Drivers included high price spreads between peak and off-peak periods, and contributions from battery storage.

B
For pumped hydro, park spreads are estimated at $0/MWh, which was $3/MWh below the prior quarter

C
For battery storage, park spreads are estimated at $20/MWh, which was around $17/MWh (or 45%) lower than that in Q3 2018. The differential between battery storage and pumped hydro was primarily due to greater battery participation in multiple FCAS markets.
The Large-scale Generation Certificate (LGC) spot price fell 34% over Q4 finishing the year at $48. Cal 18 (-35%) and Cal 19 (-10%) forward prices also fell.

The fall in the spot price likely reflects:

A record 3 GW of large-scale renewable capacity commencing generation over 2018.

• The possibility that liable entities will utilise shortfall provisions.

• The possibility that liable entities have chosen to sell their LGCs while prices are still relatively high (and chosen to go into shortfall and buy later)
NEM emissions hit record low

Quarterly emissions and emissions intensities (Q4s)

Marginal emissions intensity and price by time of day – Q4 2018, QLD

Summary

A Quarterly NEM emissions for the Q4 2018 were the lowest on record, both in terms of absolute emissions and emissions intensity.

B Drivers of downward trend include: record low brown coal-fired generation; increased renewable generation; and lower demand.

C The marginal emissions intensity and wholesale electricity price in QLD during the quarter were inversely correlated. This inverse correlation is currently typical in the NEM and is a function of the different generation types.
AEMO directs in VIC for system security

Summary

A  AEMO directed units in VIC for system security purposes (voltage control and system strength)
   • Drivers include:
     o Outages of brown coal units.
     o Low VIC operational demand.

B  Lowest duration of SA directions since Q4 17:
   • Fewer periods with very high wind output and/or relatively low prices.
**Summary**

**A**  Average DWGM and STTM price increase of 40% across all AEMO markets since Q4 2017. Highest recorded avg. quarterly prices in the ADL STTM & DWGM and second highest in BNE and SYD STTM and the GSH.

**B**  Record prices despite comparatively low demand, 17 PJ (4%) lower than Q4 2017 – mostly due to a large fall in GPG.

**C**  Higher priced supply in DWGM and STTMs: Injections priced up to $8/GJ reduced by 36% and between $8 - $15/GJ increased 32%.

**D**  The price changes have been influenced by: record high daily pipeline deliveries to Curtis Island for LNG export; comparatively high NEM electricity prices; and reduced supply from Longford compared to Q4 2017 (-29%)
East coast gas production reduces

Change in production – Q4 2018 vs Q4 2017

Historical Longford production

Summary

A. Large fall in Longford production, down 24 PJ (-29%) compared to record high 2017 production

B. QLD production steady: increases at Woleebee and RubyJo offset by reduced production at other fields

C. Increases in Otway production, up 2 PJ (+21%) offset by reduced BassGas & Minerva production, down 1.9 PJ (-23%)

D. High injections into Iona (5.8 PJ) relative to Q4 2017 (2.6 PJ), further tightened supply during the quarter
Summary

A. International Brent (oil) prices reversed consistent price rises over most of 2018 to drop 33% in Q4 2018.

B. Oil prices over Q4 2018 were influenced by concerns surrounding global oversupply and softening oil demand, amid high uncertainty about global economic growth.

C. Will domestic gas prices fall in Q1 2019 in line with falling oil and LNG netback prices?
Questions?