THE UNIVERSITY OF MELBOURNE

Melbourne Energy Institute

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Quarterly Energy Dynamics report Q3 2022

Presenter: **Mr Kevin Ly, Group Manager – Reform Development & Insights, AEMO**

Moderator: **Dr Sebastian Püschel**

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Q3 2022 Overview

The NEM in Q3 2022 was characterised by;

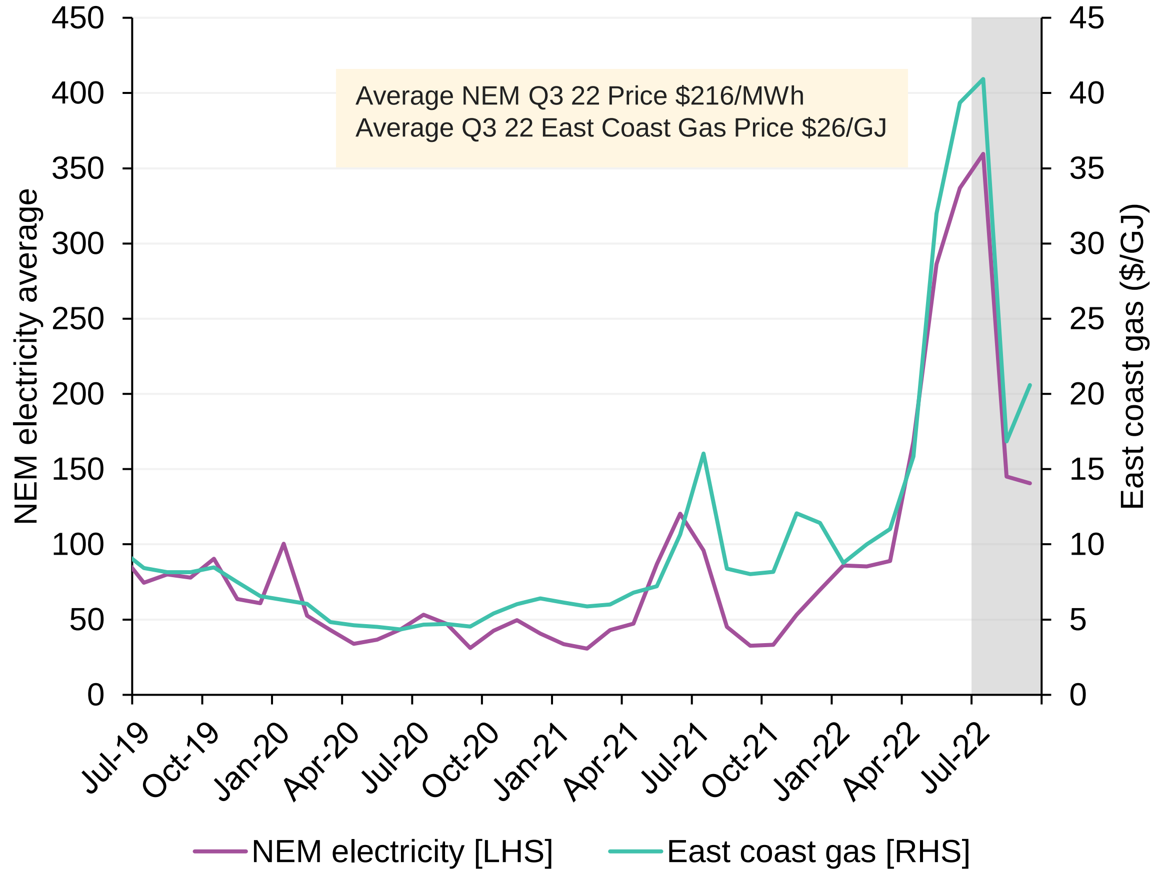
- Very high prices; averaging $216/MWh (+271% from Q3 21)
- Increased demand; 22,414 MW (+2.6%)
- Higher renewable output (+776 MW), gas (+259 MW), less coal (-280 MW);

East Coast Gas Markets in Q3 2022 was described by;

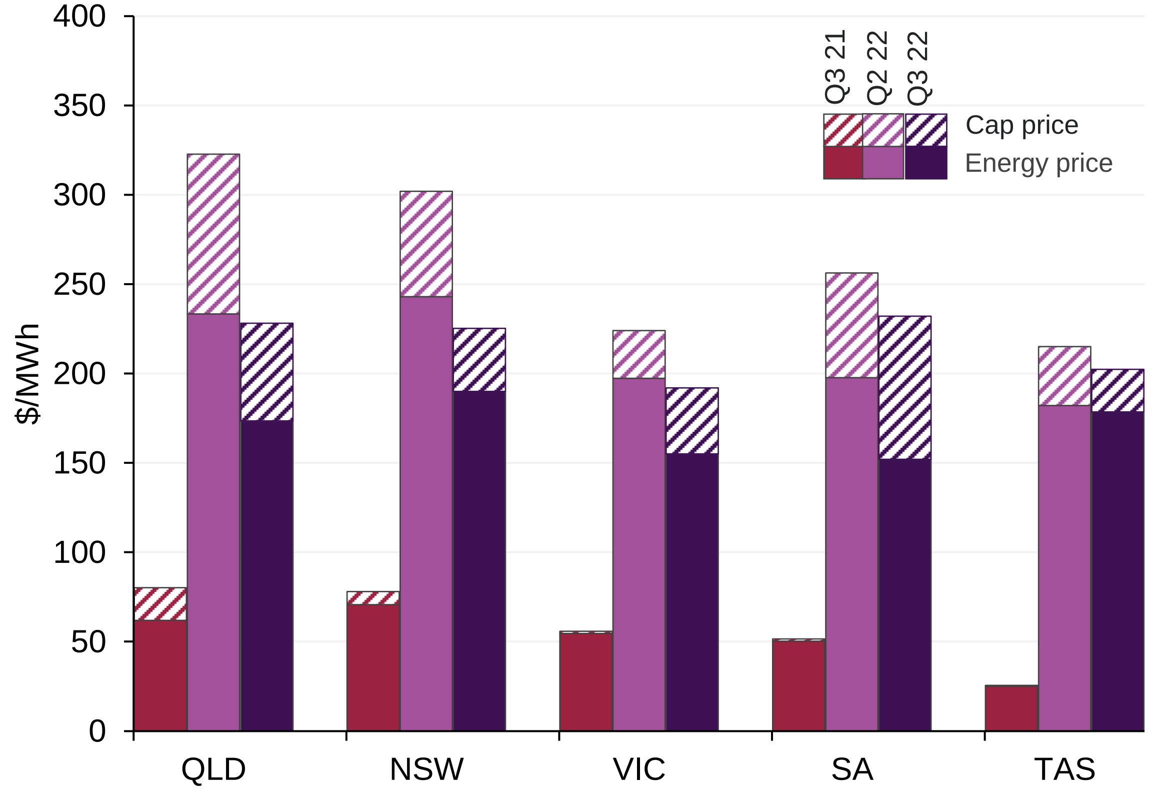
- High prices; averaging $26/GJ (+142% from Q3 21), slightly below Q2 22’s $28/GJ
- AEMO issued two notices of a threat to system security
- Lower Queensland gas production, lower export and higher Victorian production

Electricity Prices

NEM electricity and east coast gas prices



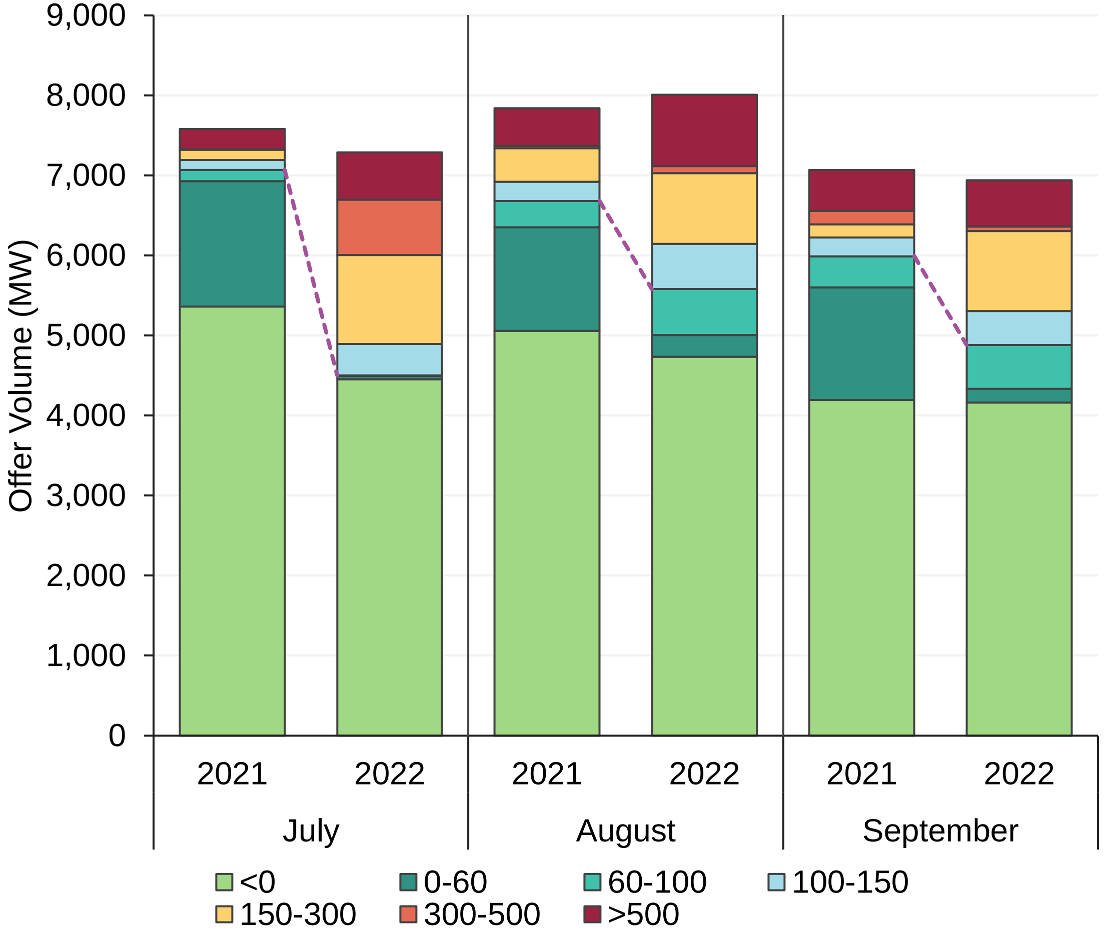
High energy prices across all NEM regions in Q3 2022



Marginal Offers Increase

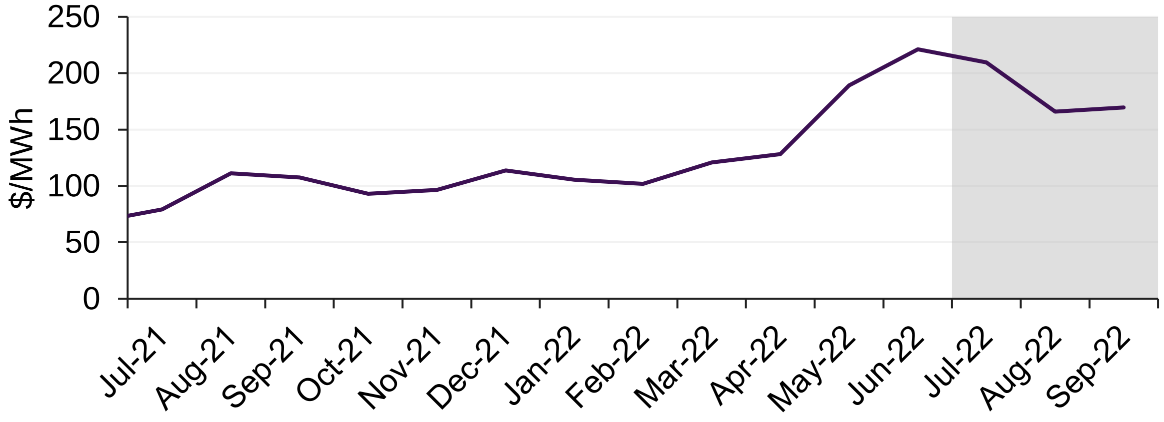
NSW Black coal-fired generator offers

Average monthly offers by price range – Q3 2021 vs Q3 2022



Key black coal-fired marginal offers increase

Monthly volume-weighted marginal offer prices – Eraring, Mt Piper, Vales Point and Gladstone (offers between $10/MWh to $300/MWh)



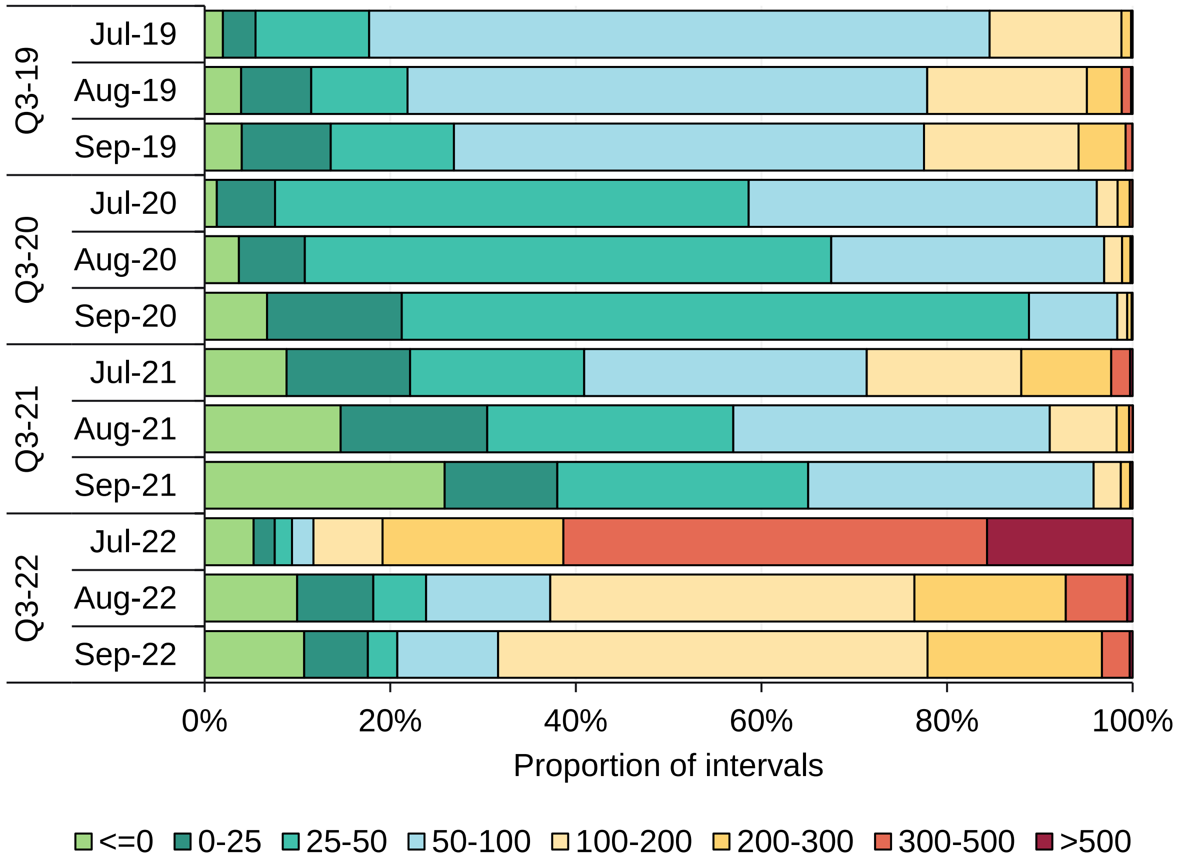
Thermal coal at record levels

Newcastle export thermal coal $A/Tonne daily

Price Volatility

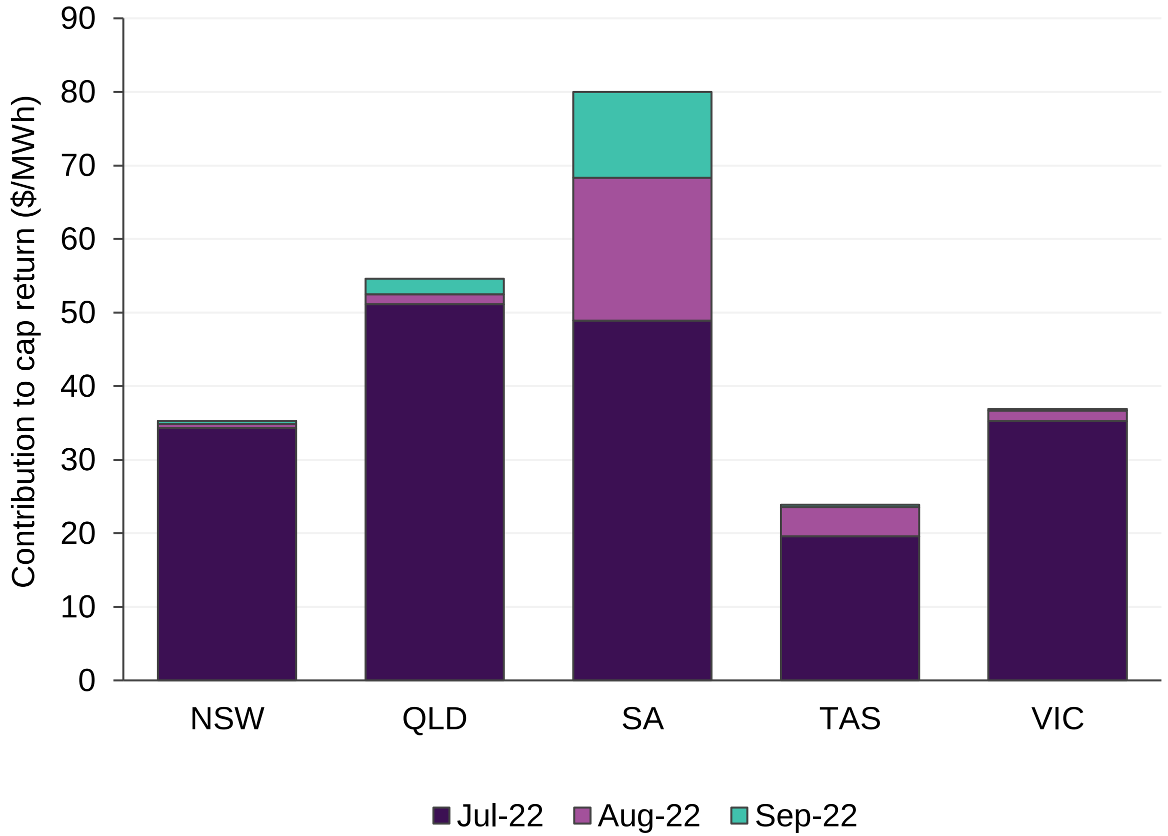
Occurrence of high prices increase

NEM quarterly wholesale electricity dispatch price frequency by price range



Price volatility most confined to July

Contribution to quarterly cap return by region and month



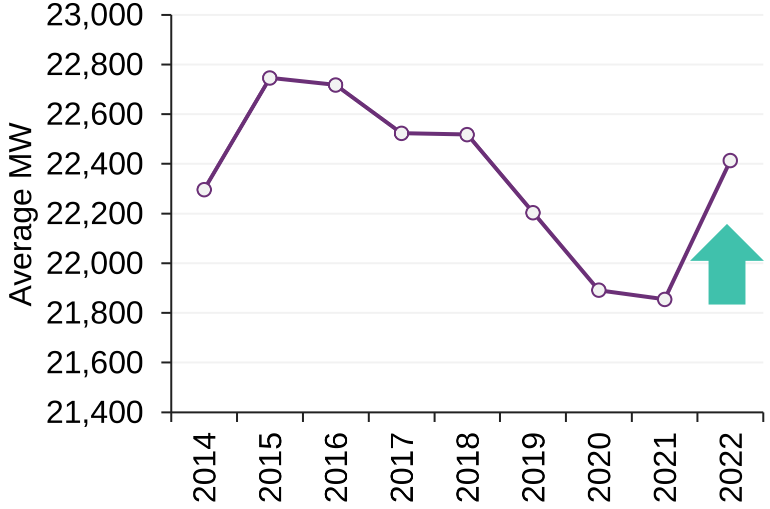
Operational Demand

Operational demand was 22,414 MW (+559MW) higher than Q3 21

- Weather (wet and cold quarter)
- No COVID restrictions in NSW and Victoria
- Lower distributed PV growth

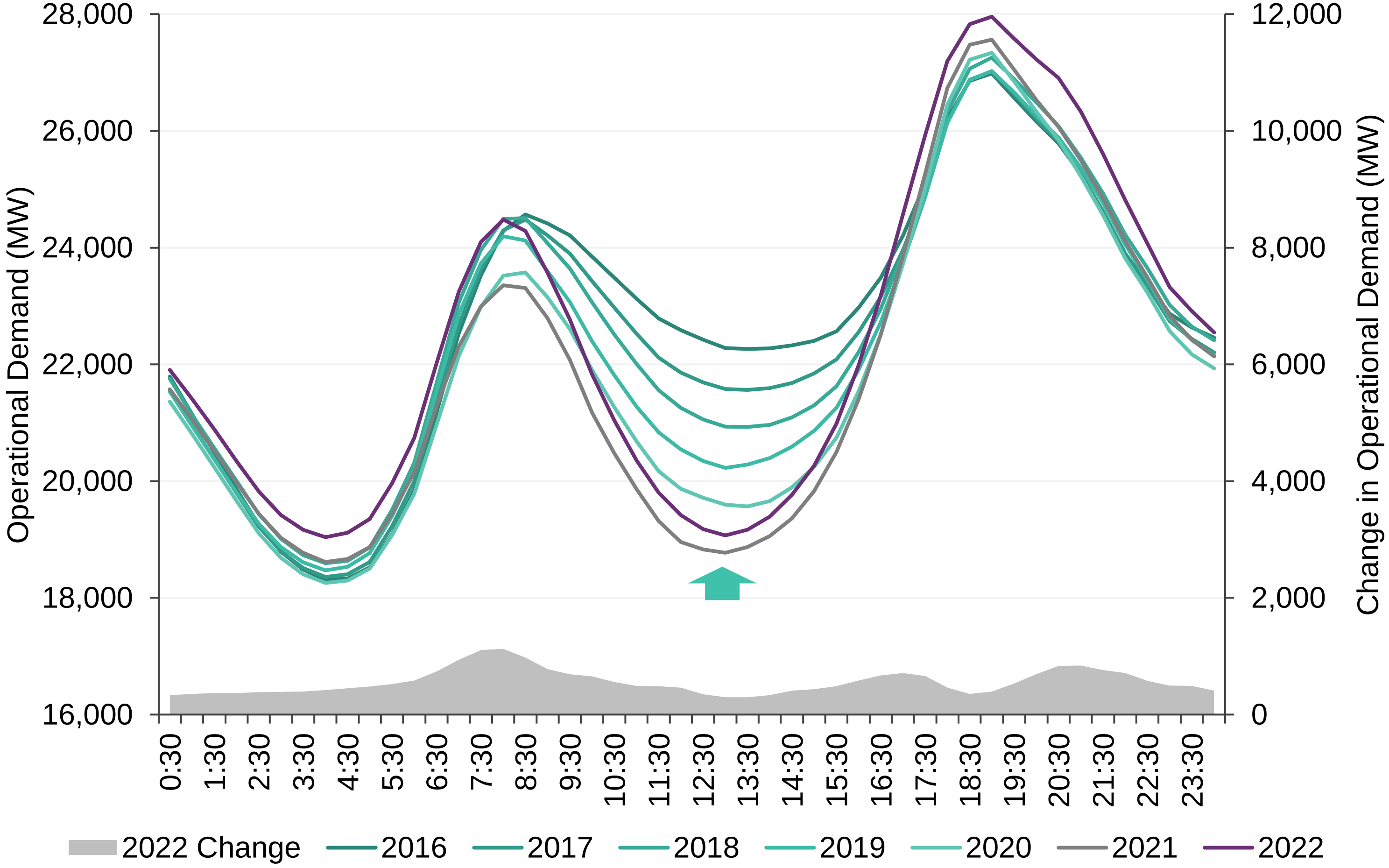
First Q3 growth in operational demand since 2014

NEM average operational demand (Q3s)



Q3 NEM Operational Demand reverses trend

Average quarterly operational demand by half hour – 2016 to 2022



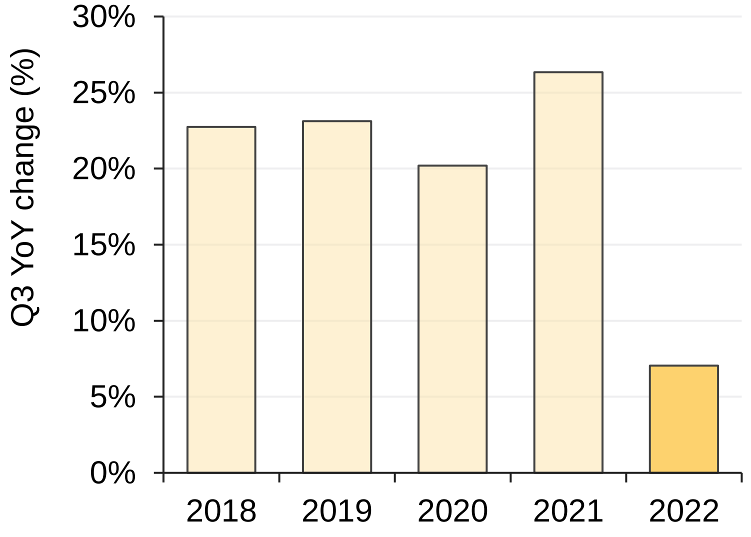
Distributed PV

Distributed PV still growing, but not by as much

- Weather (cloudy and wet)
- Less installations

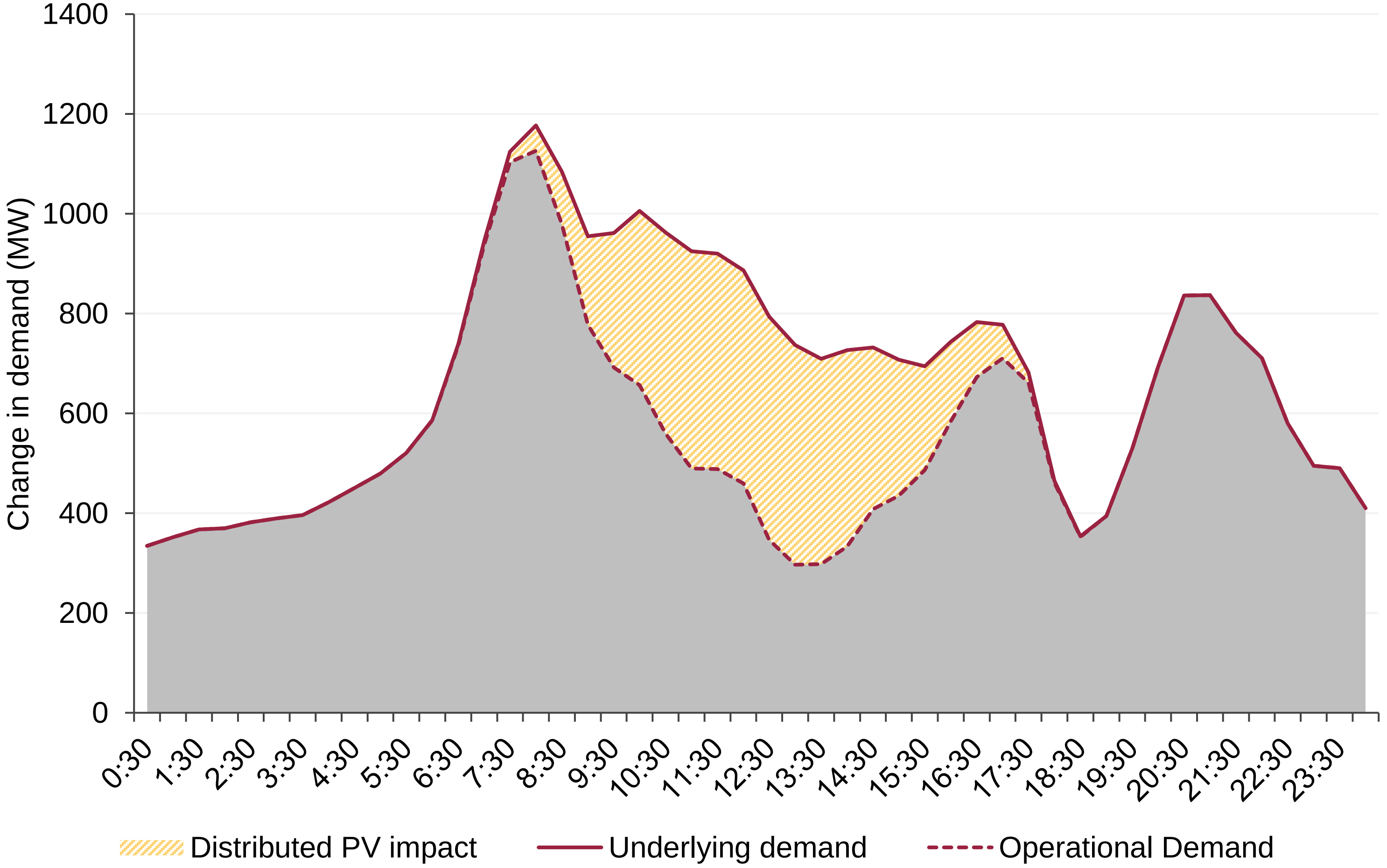
Year on year Q3 growth in distributed PV

NEM average distributed PV change (Q3 on Q3)



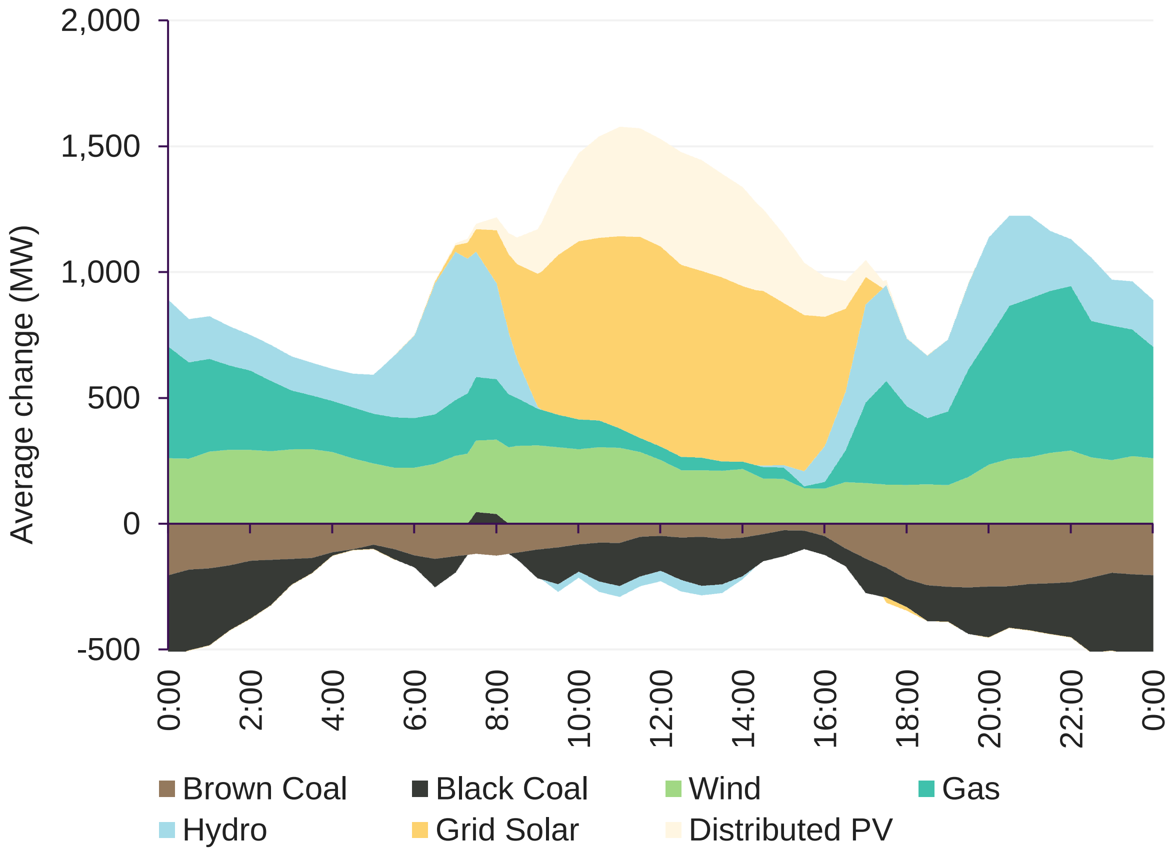
Q3 NEM Operational Demand

Change in quarterly operational demand by half hour



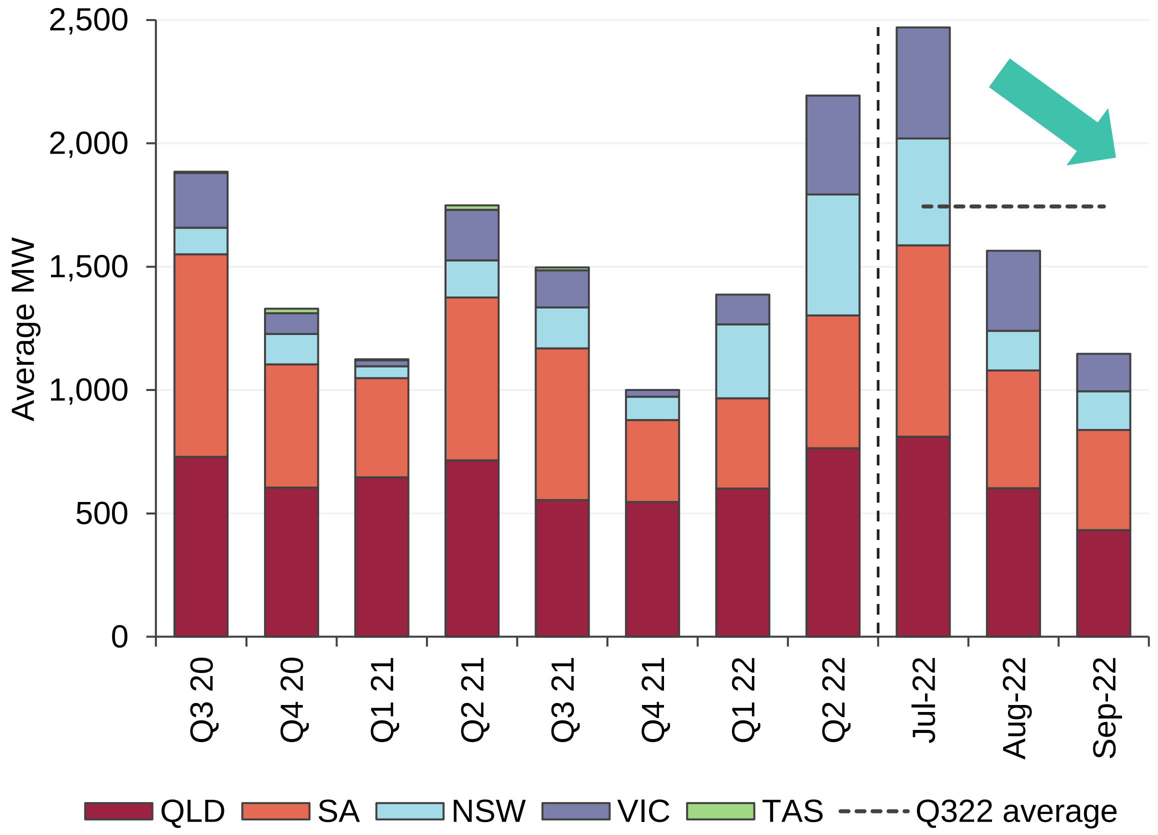
Supply mix changes

Renewables and gas output up, coal declined



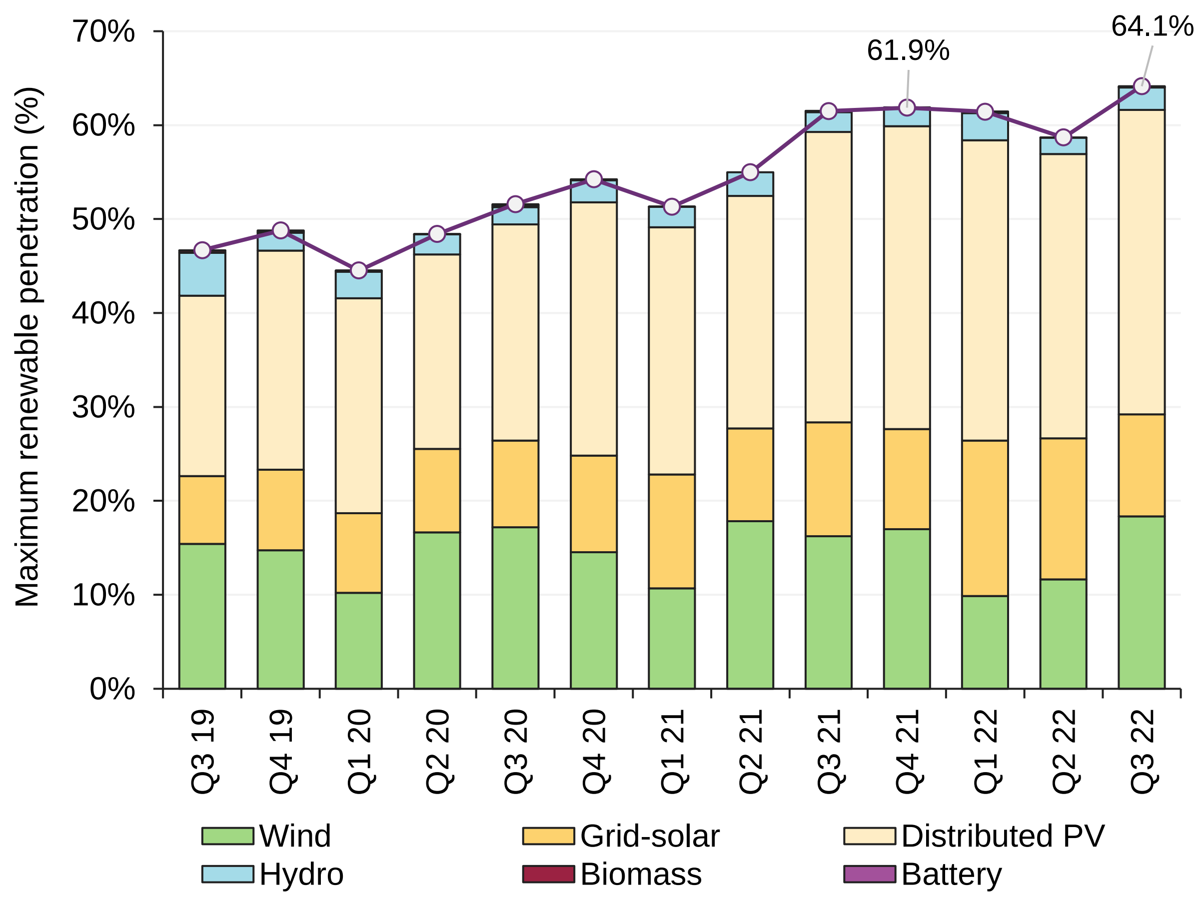
Majority increase from high output in July

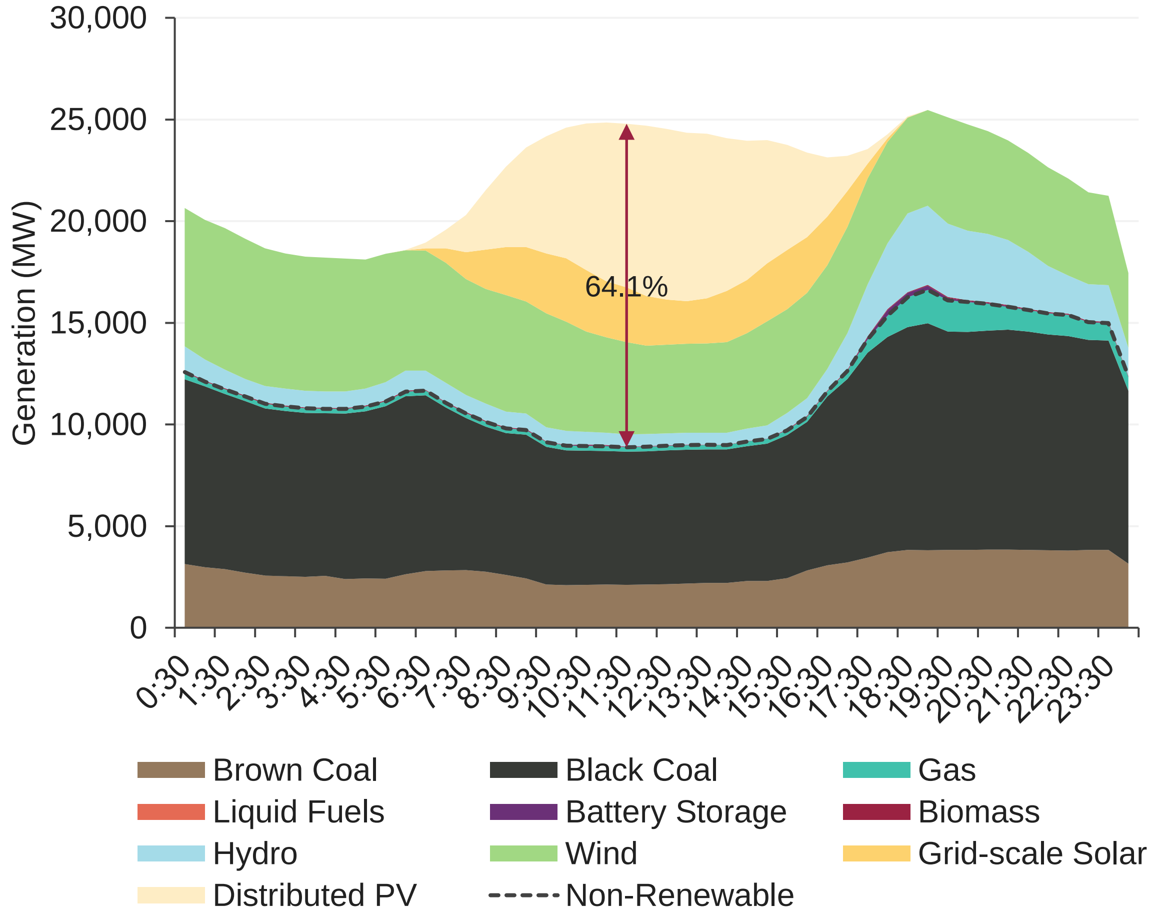
NEM gas-fired generation by region – quarterly and monthly for Q322



Renewable penetration

NEM instantaneous renewable penetration reached new highs of 64.1%

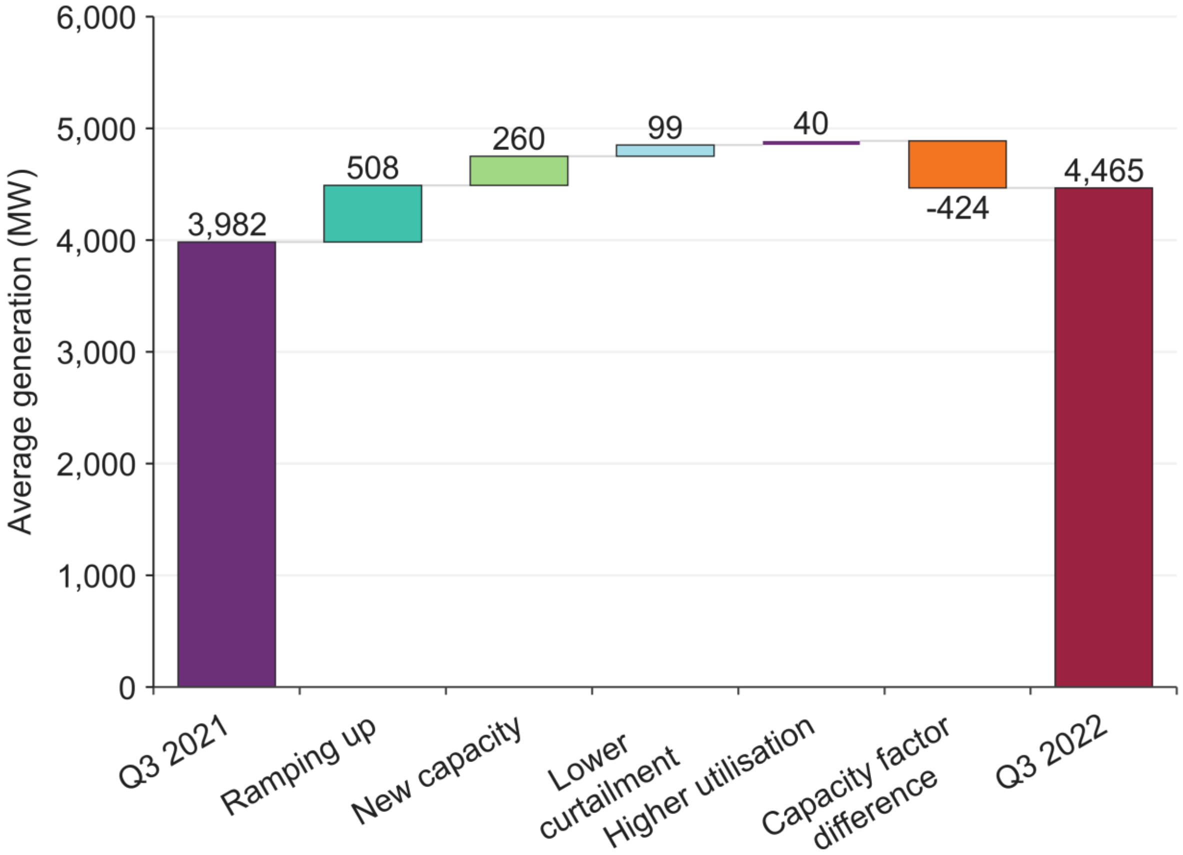




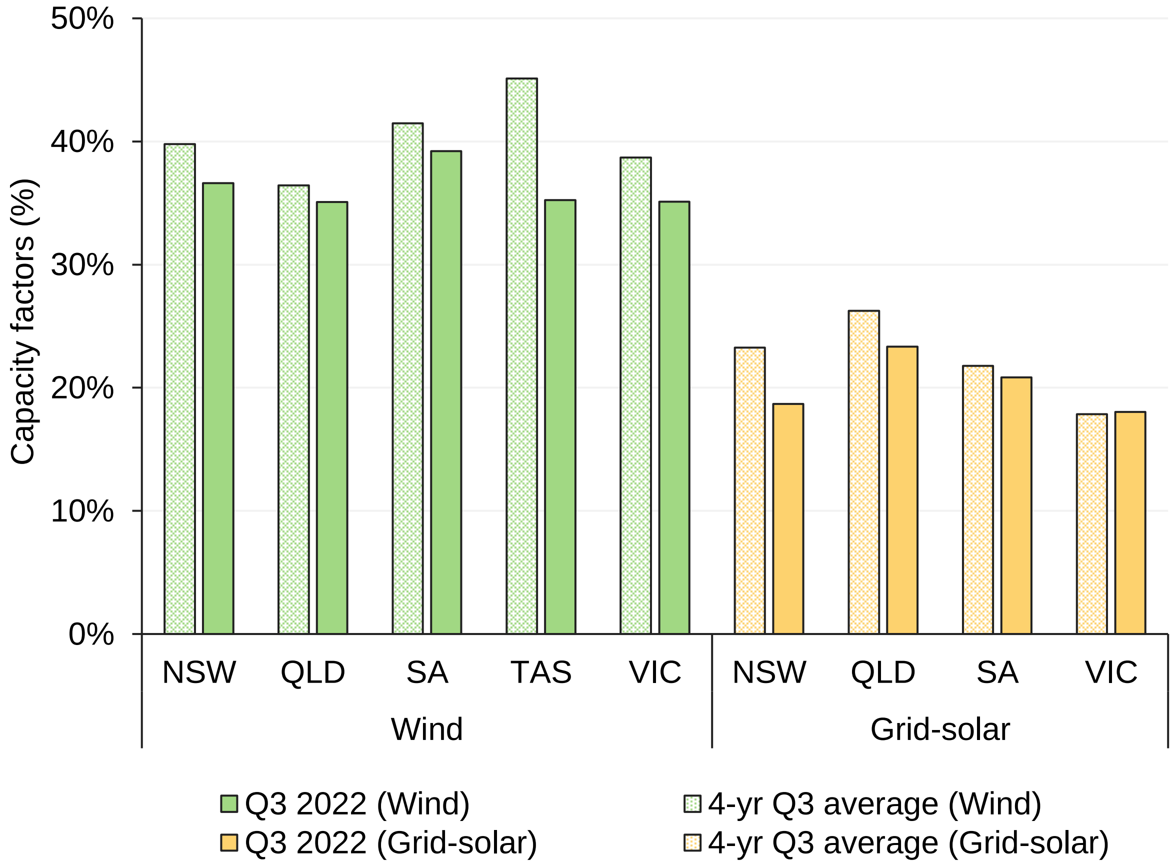
Wind and solar output

Ramping up and new capacity additions were the key contributors

Change in NEM VRE generation by drivers – Q322 vs Q321



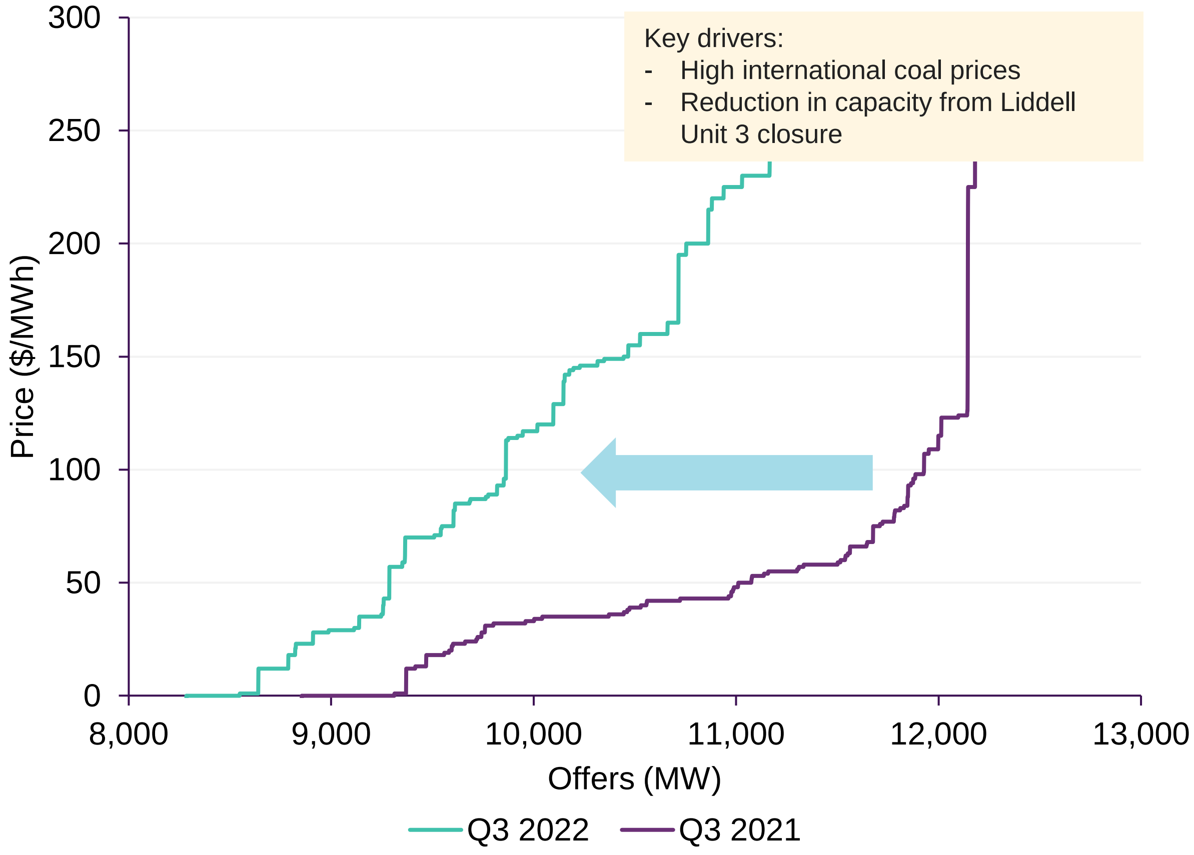
Offset by lower grid-scale wind and solar available capacity factors



Coal output drivers

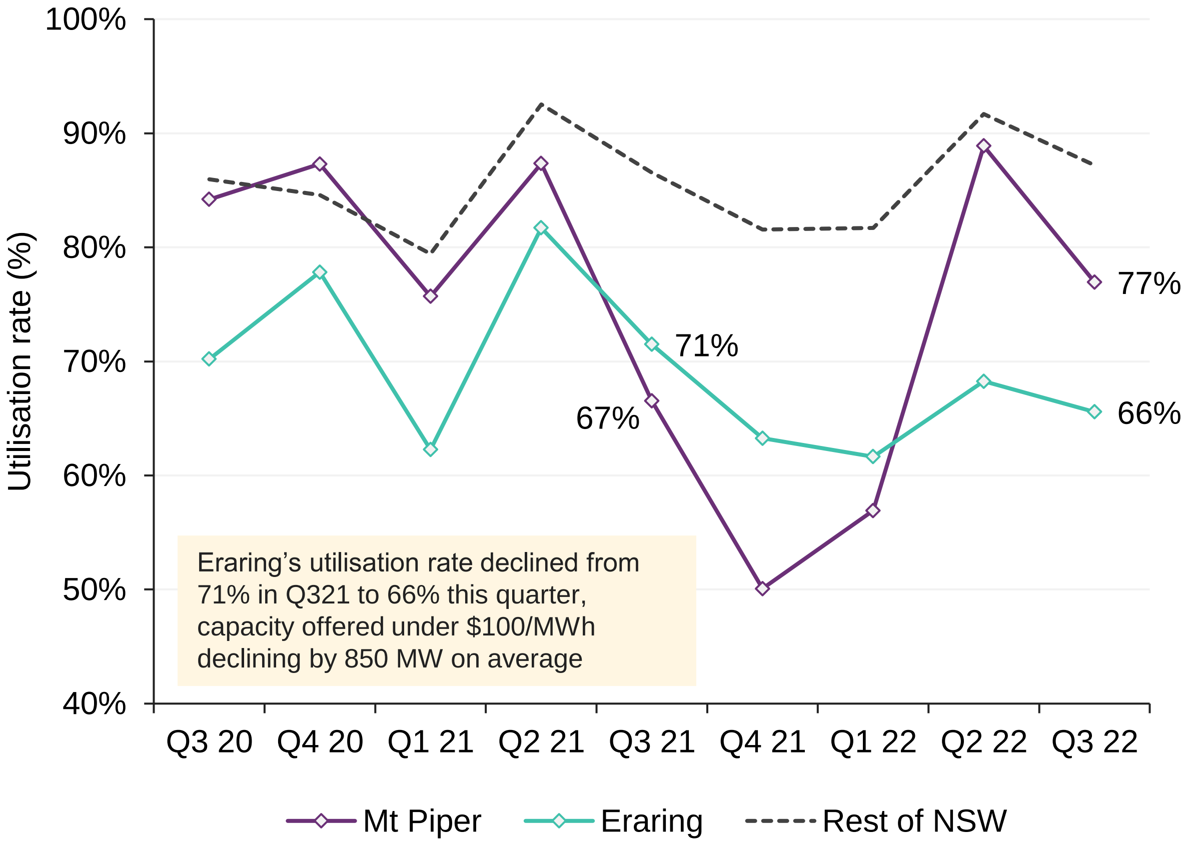
Offers under $100/MWh reduced by >2,000 MW

NEM Black coal bid supply curve – Q322 vs Q321



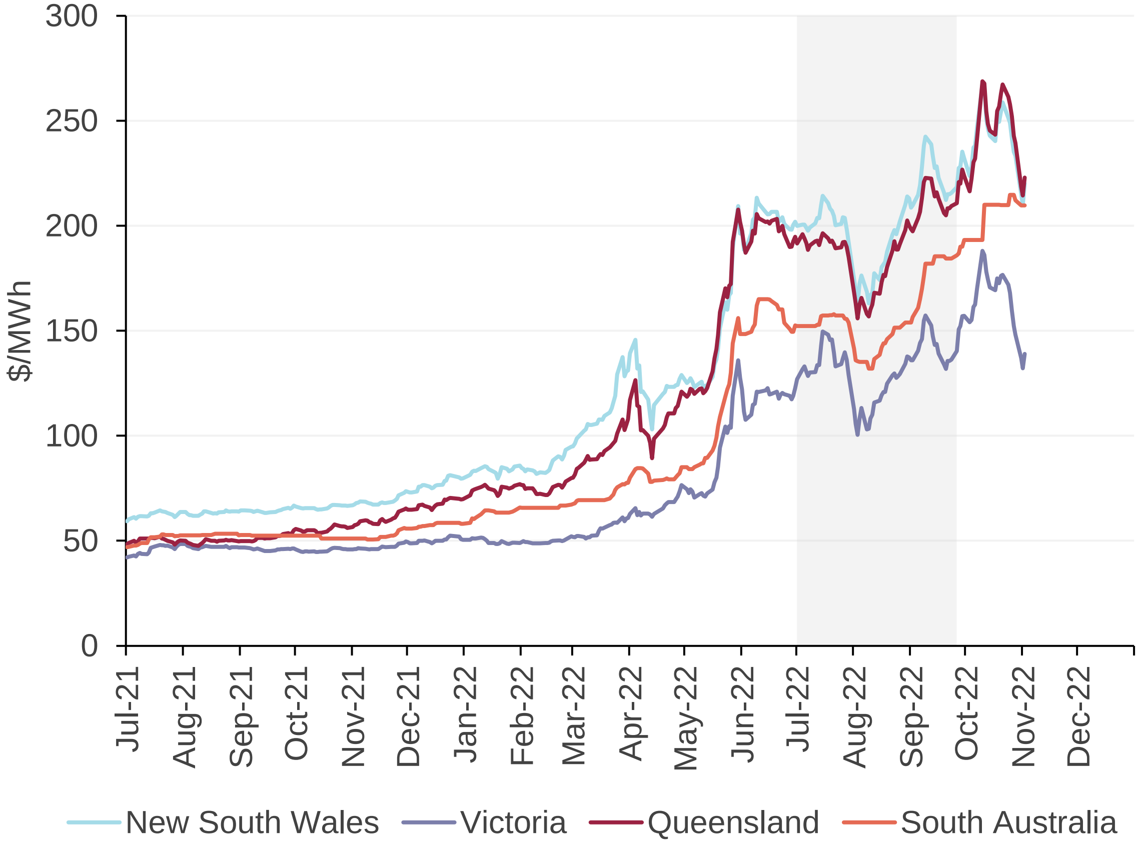
Eraring utilisation rate lower than Q321

Eraring, Mt Piper and rest of NSW black coal fleet utilisation rate

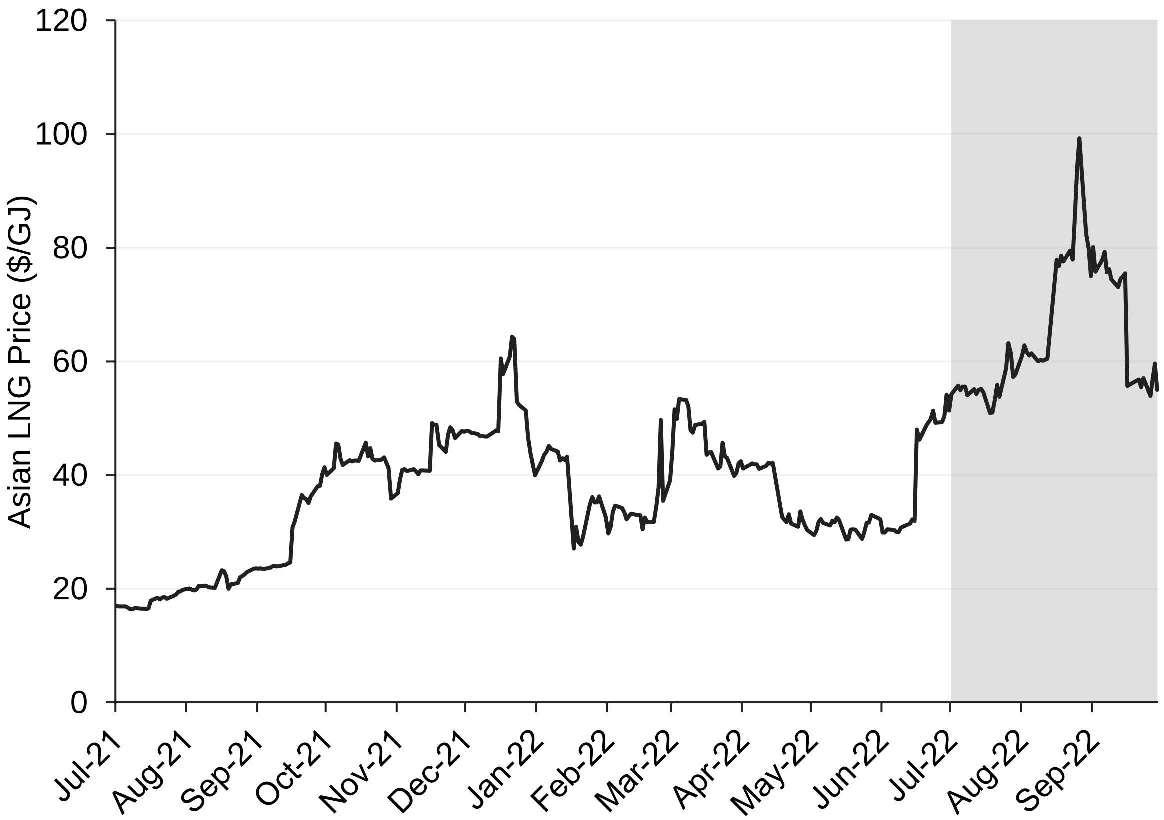


Electricity Futures & Asian Gas prices

Cal 23 Futures rally



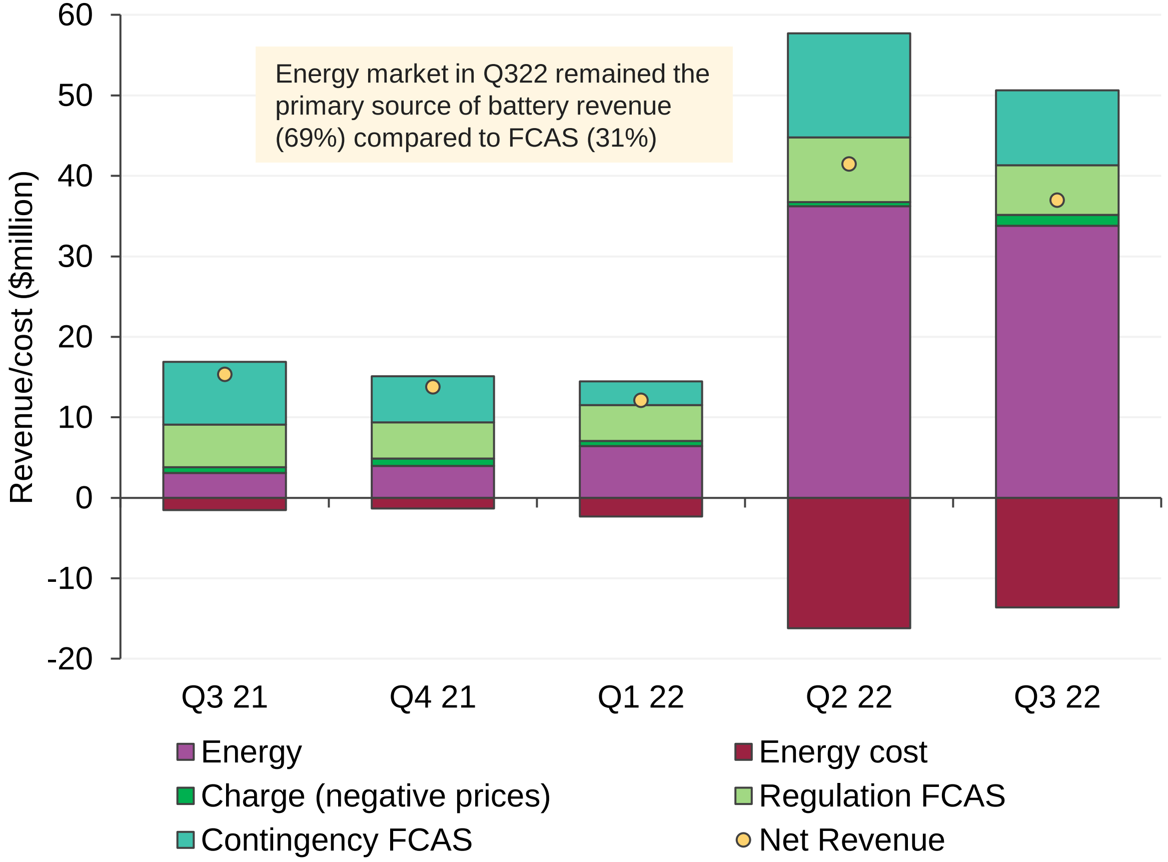
Asian LNG prices remain high



Storage revenues

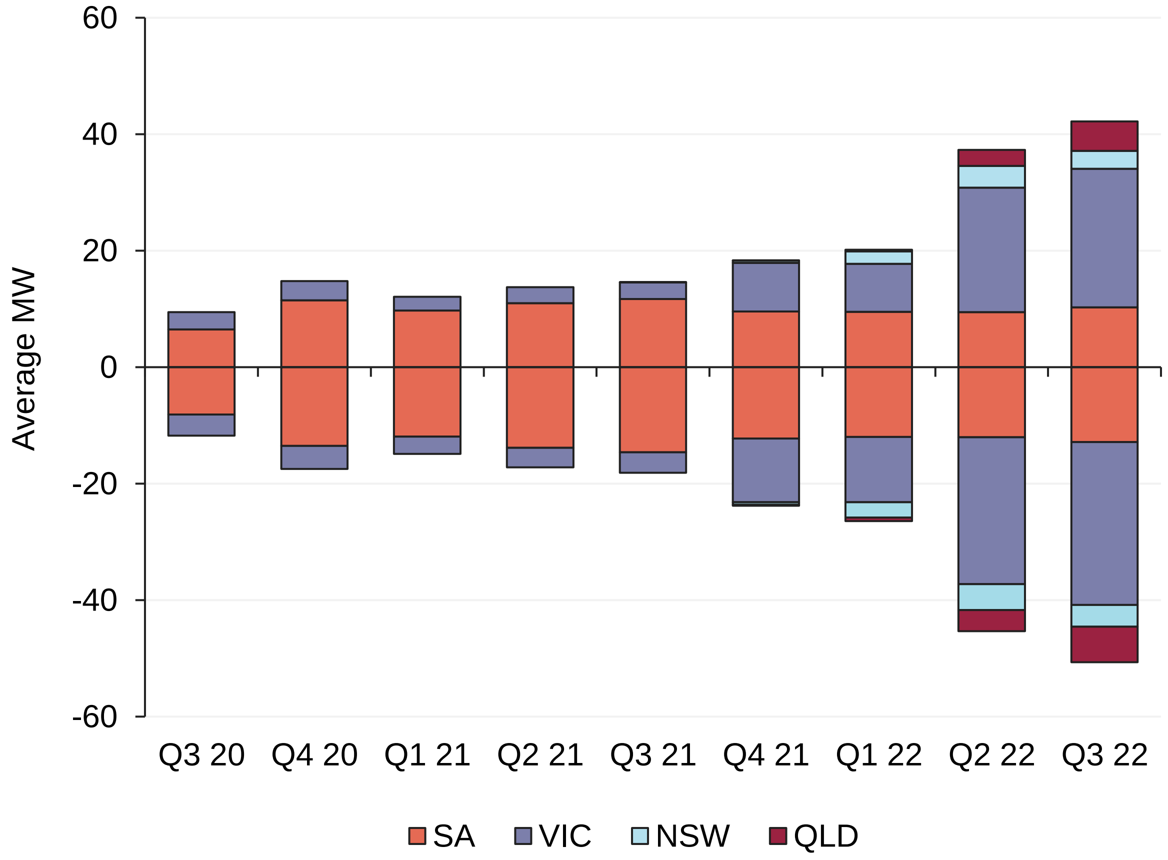
Battery net revenue remained high

Estimated battery storage revenue – Q321 to Q322



Increase dispatch from Vic, NSW and Qld

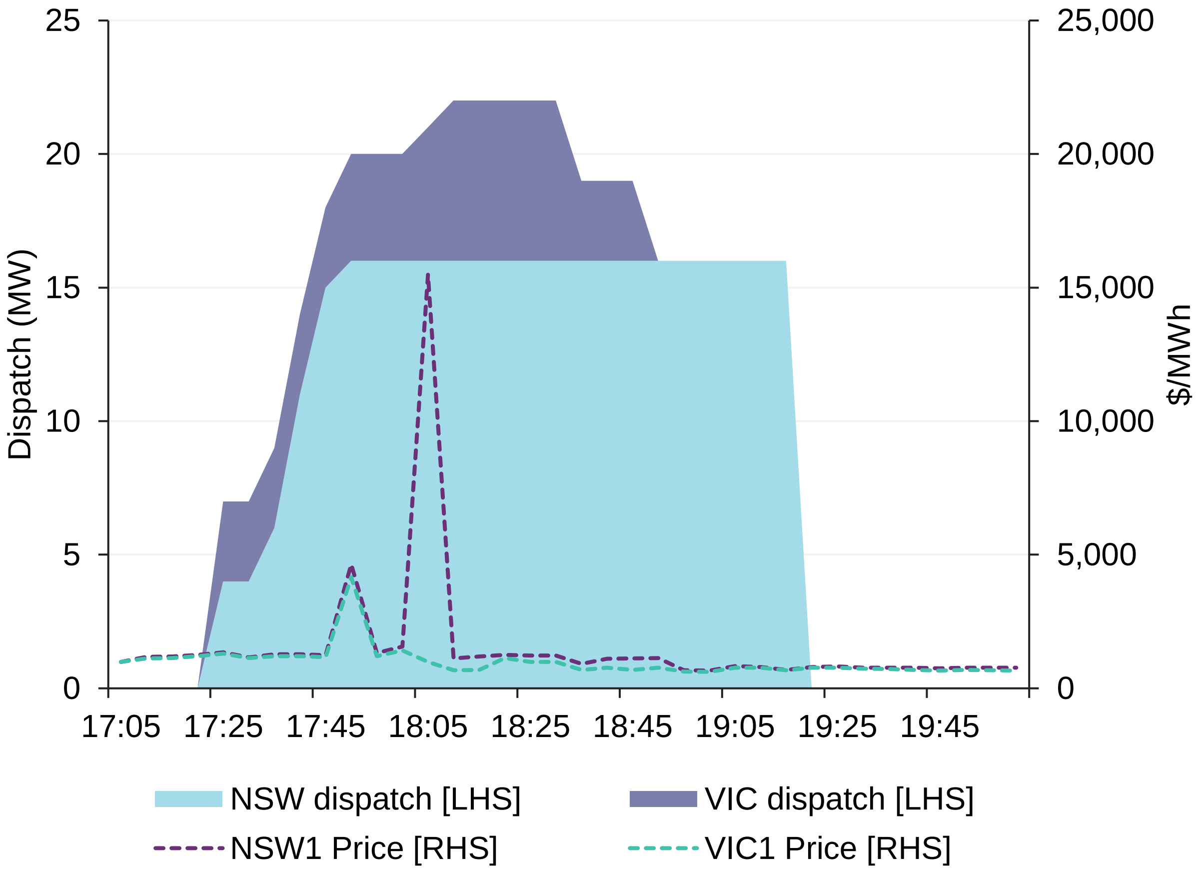
Average quarterly battery generation (+ve) and charging (-ve)



Wholesale demand response

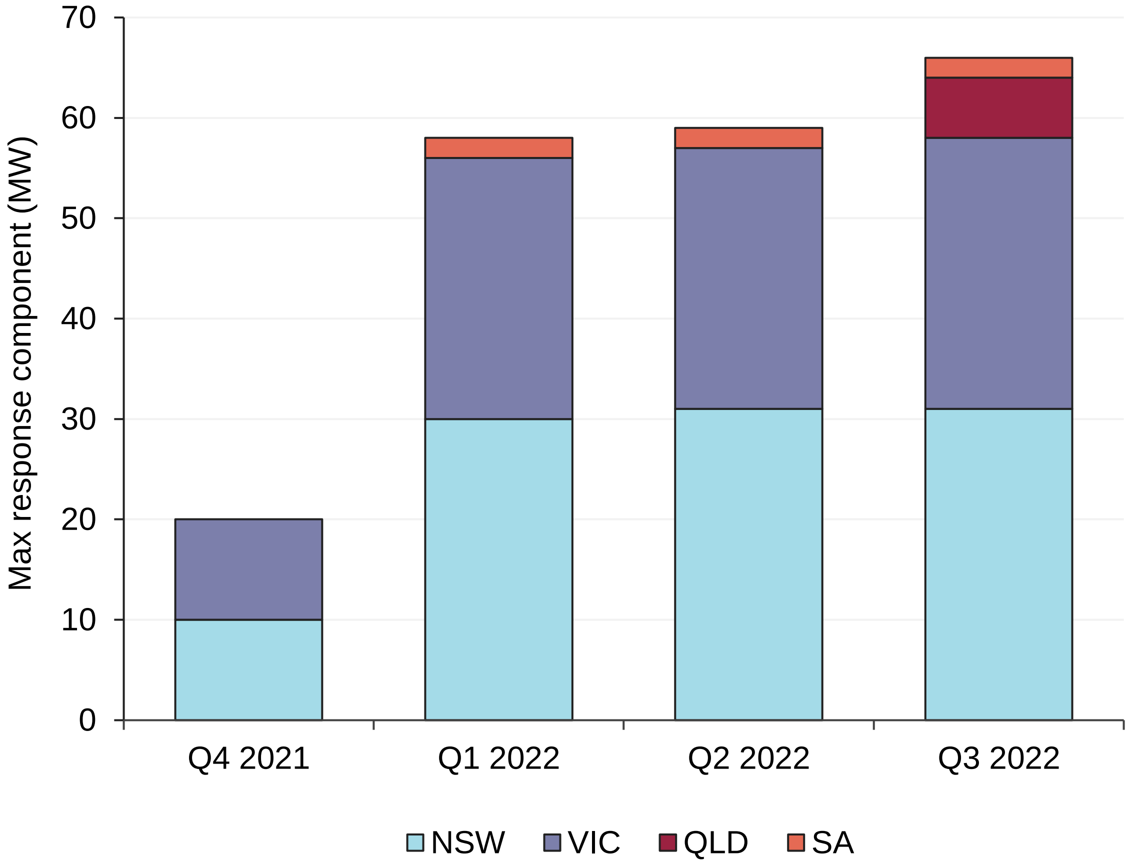
Active participation during price volatility

NSW and VIC WDR dispatch and spot prices



Total registered WDR reaches 66 MW

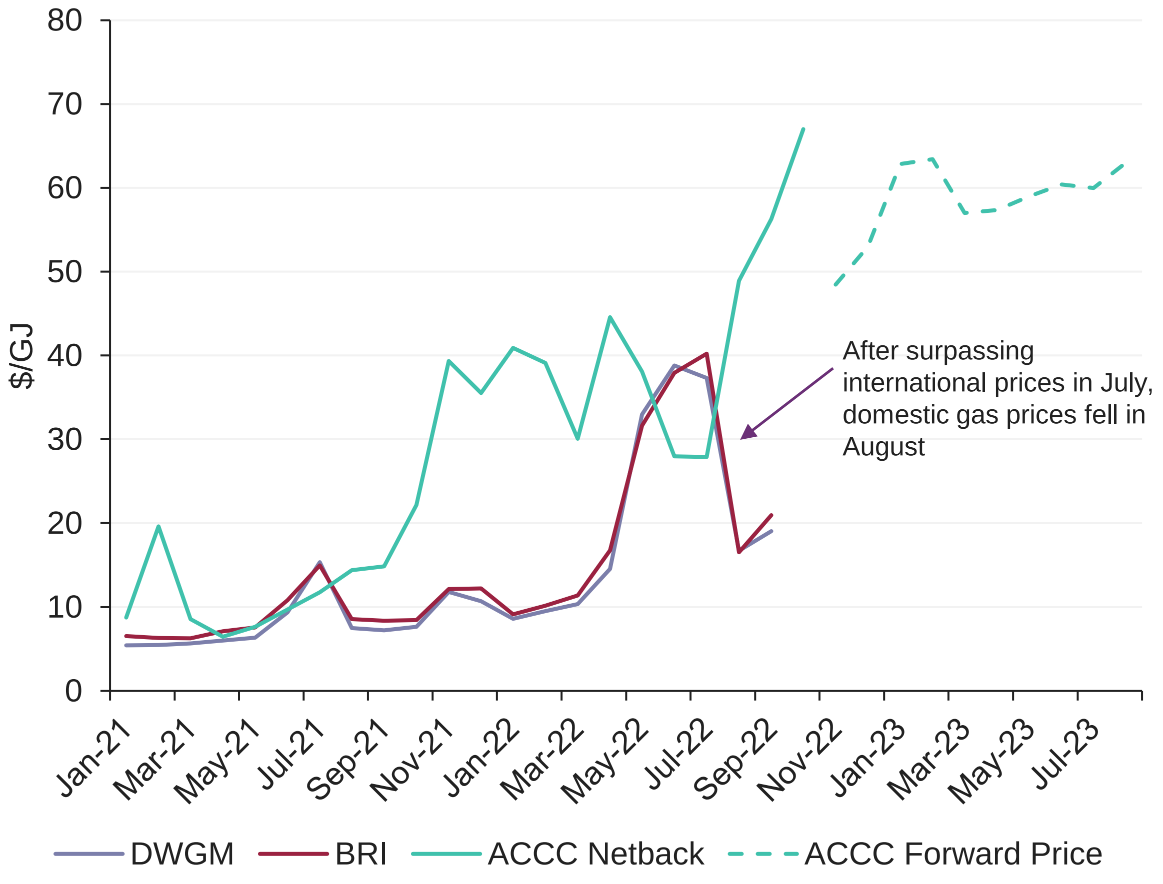
Total WDR capacity registered by quarter and region



East coast gas prices

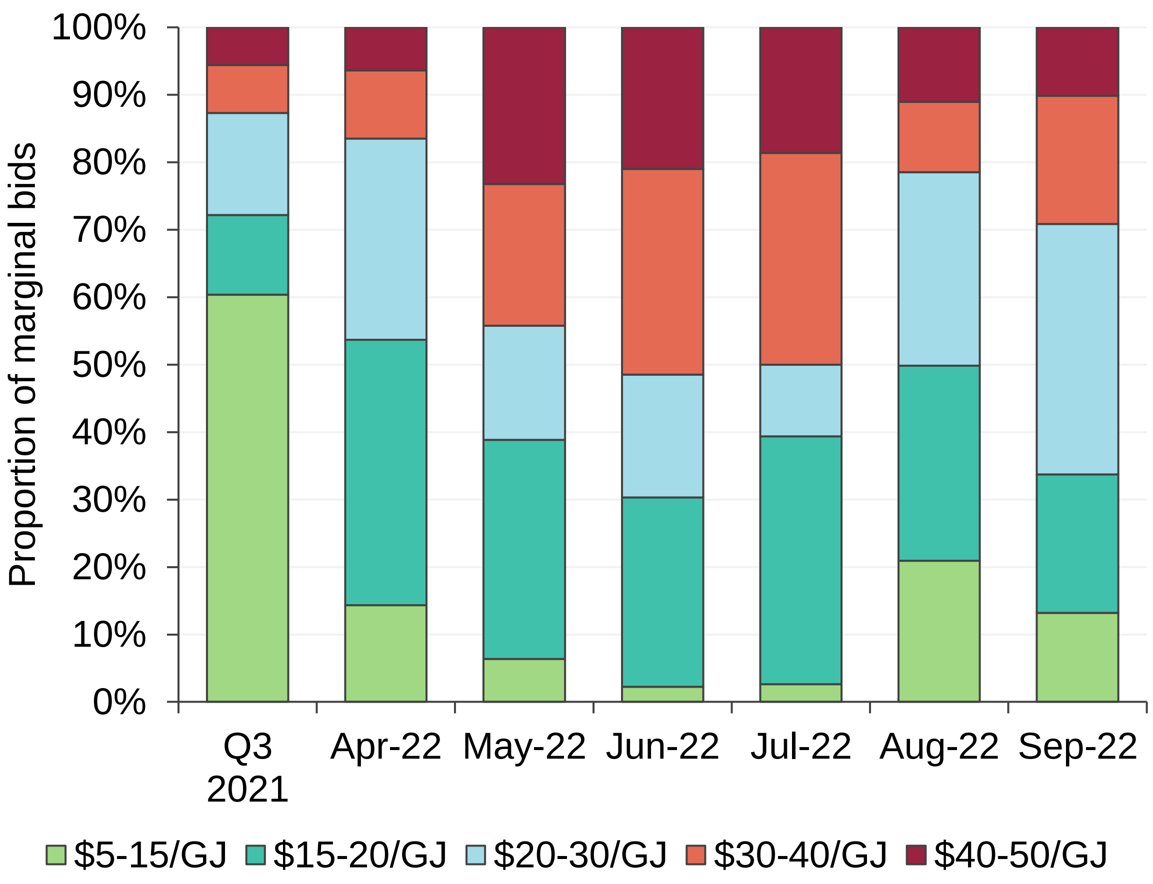
East coast gas prices up 142% from Q3 2021

DWGM and Brisbane average price compared to ACCC LNG Netback price



DWGM bids driving record July prices

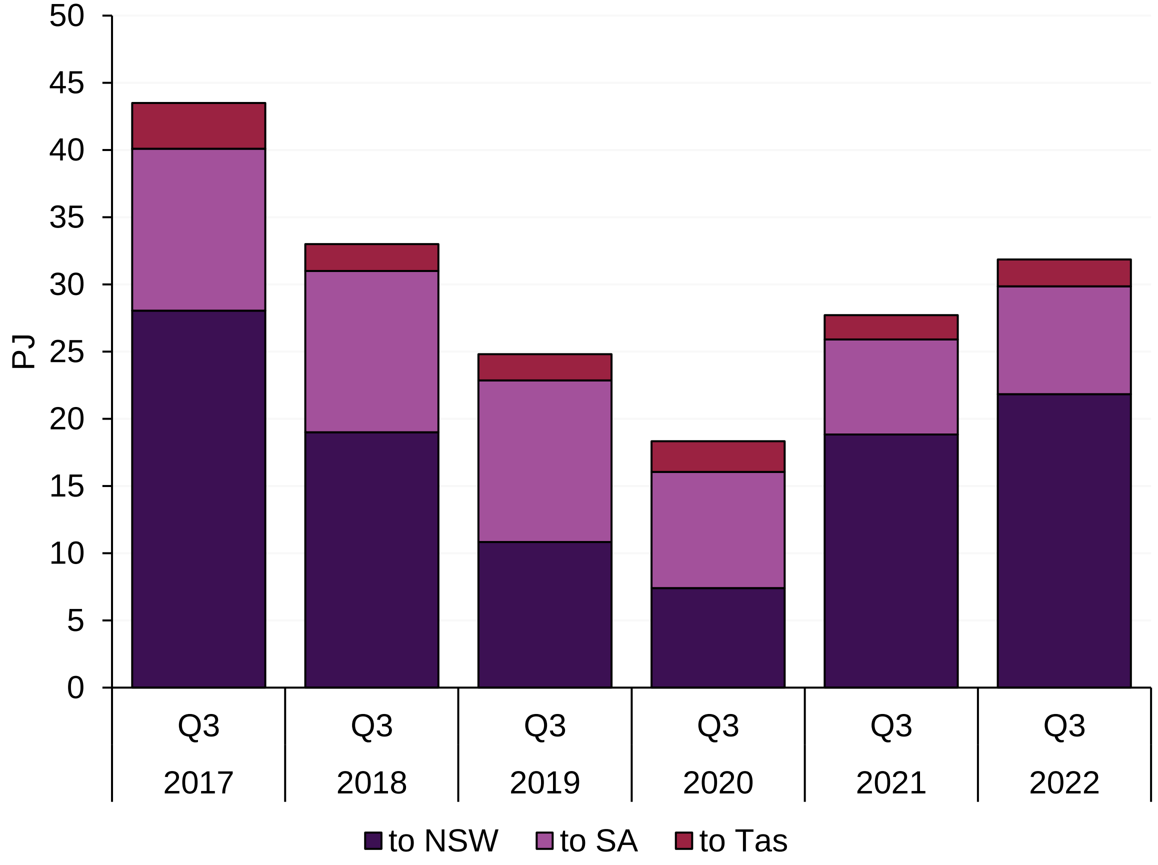
DWGM – proportion of marginal bids by price band



Greater reliance on Victorian supply

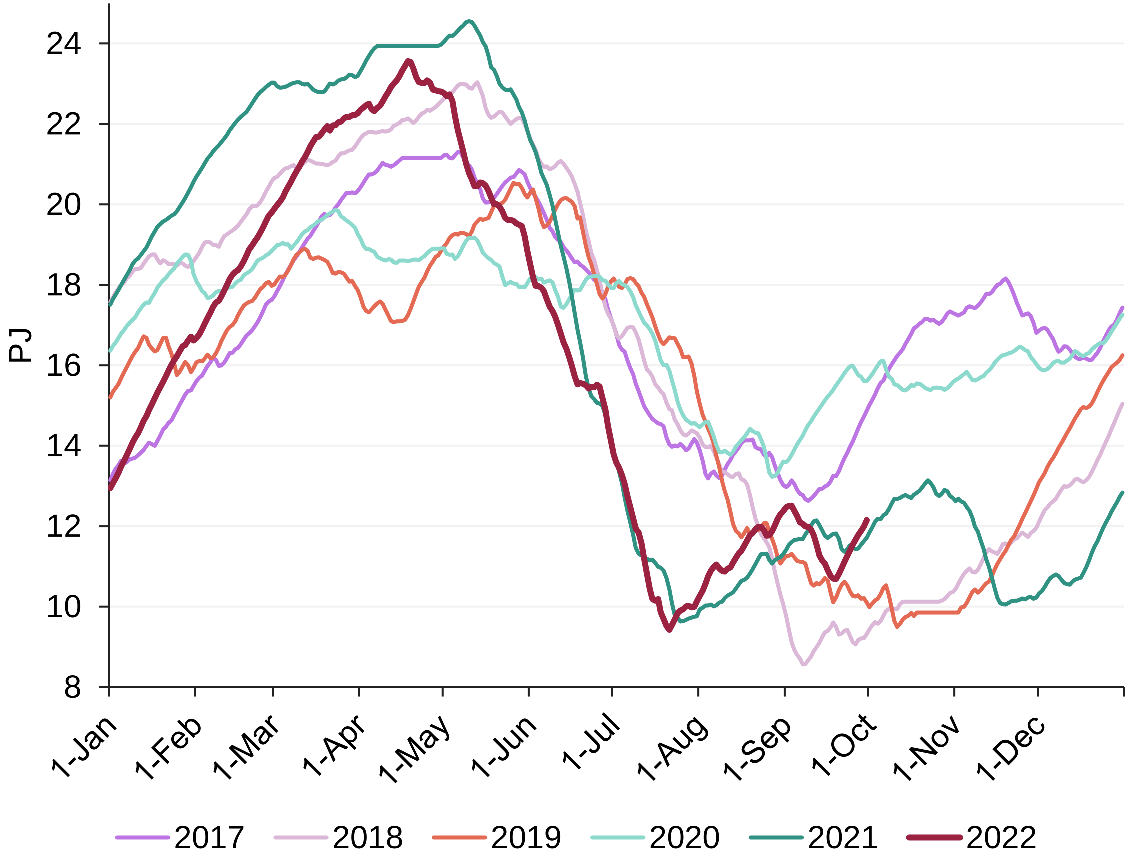
Highest Victorian Q3 gas exports since 2018

Victorian net gas transfers to other regions



Iona storage levels deplete rapidly in July leading to threat to system security in DWGM

Iona storage levels



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