Melbourne Energy Institute

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AUSTRALIAN ENERGY MARKET OPERATOR

MEIxAEMO Seminar Series

Quarterly Energy Dynamics report: Q2 2023

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Moderator: **Prof Pierluigi Mancarella,** Program Leader-Energy Systems**, Melbourne Energy Institute**

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Agenda

Wholesale electricity prices → **Electricity demand & generation** → **East coast gas markets**

Wholesale electricity prices

- Quarterly price trends
- Regional prices
- Price setting dynamics
- Price drivers
- Negative prices

Electricity demand & generation

- Demand changes
- Generation supply mix changes
- Black coal-fired generation
- Gas-fired generation
- Variable Renewable Energy (VRE) changes

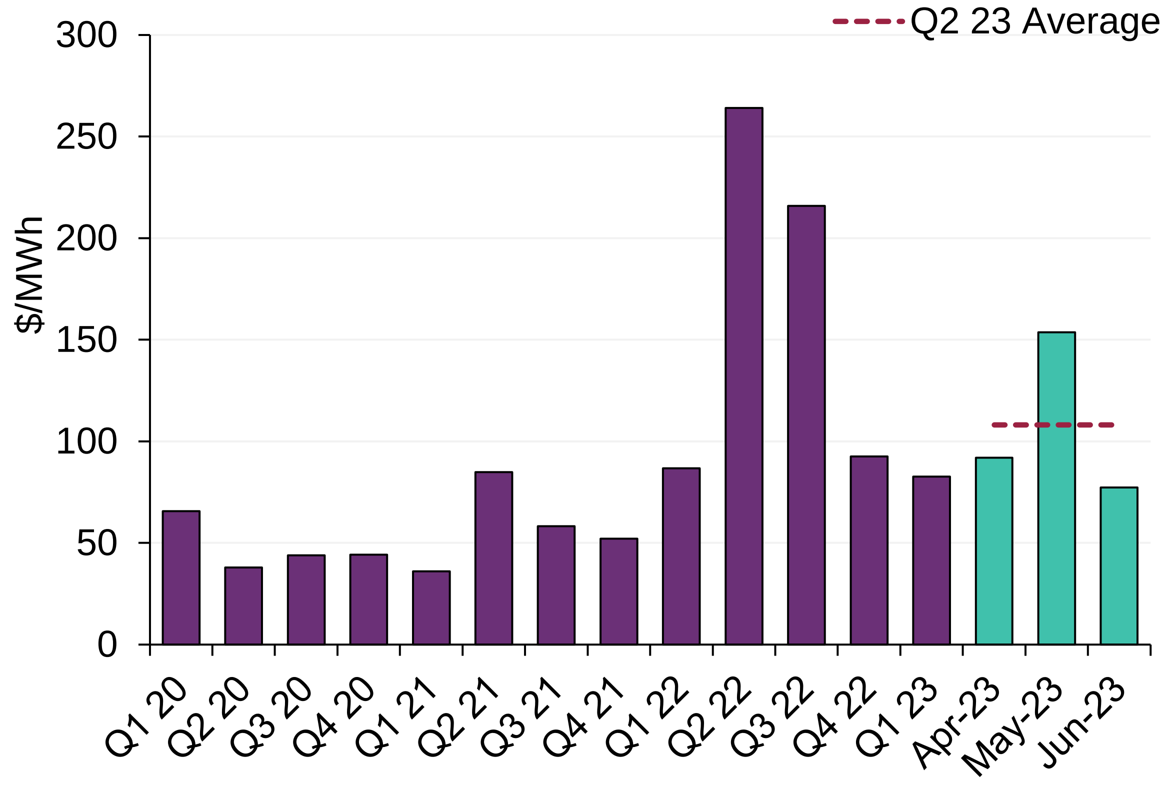
East coast gas markets

- East coast gas prices
- Gas demand
- LNG changes
- Gas storage

Wholesale Electricity Prices

Prices 59% down on Q2 22, still the second-highest Q2

NEM average wholesale electricity prices – quarterly since Q1 2020



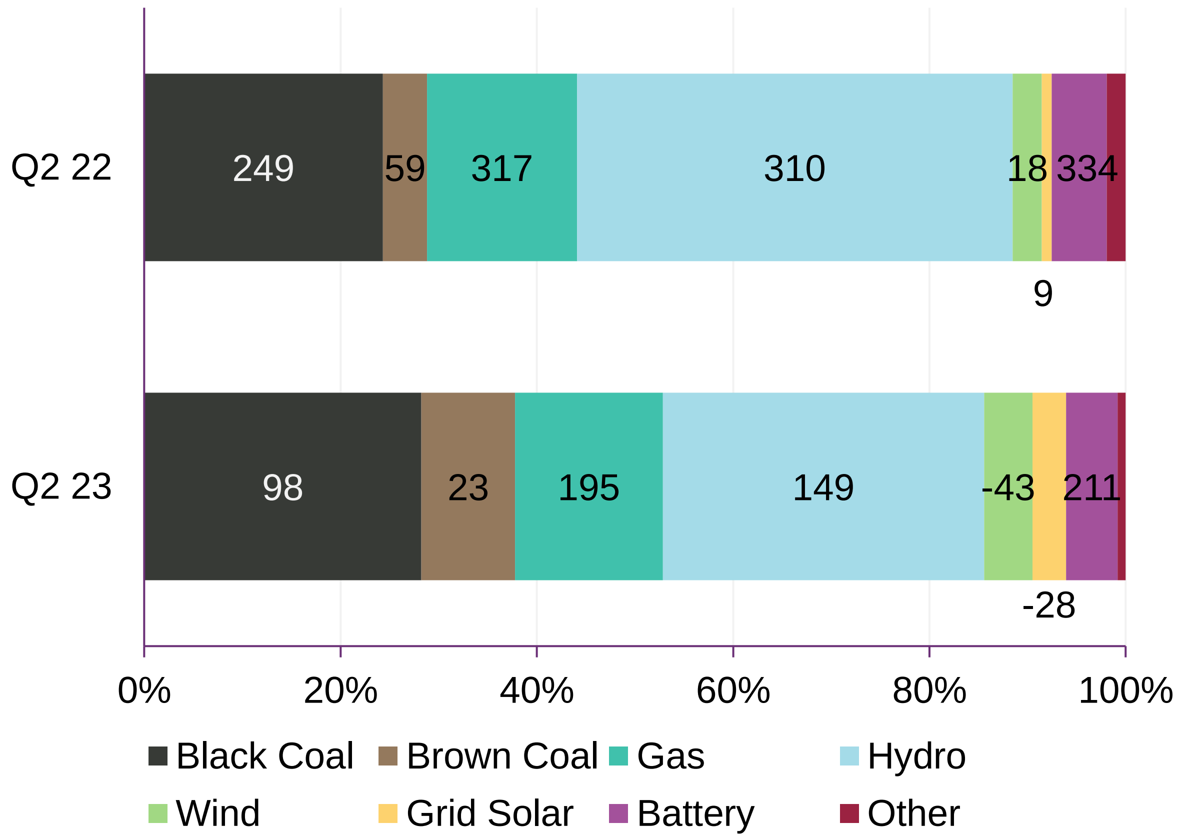
Regional prices more than halved from Q2 2022 levels

Average spot price by region – energy and cap components

Price Drivers

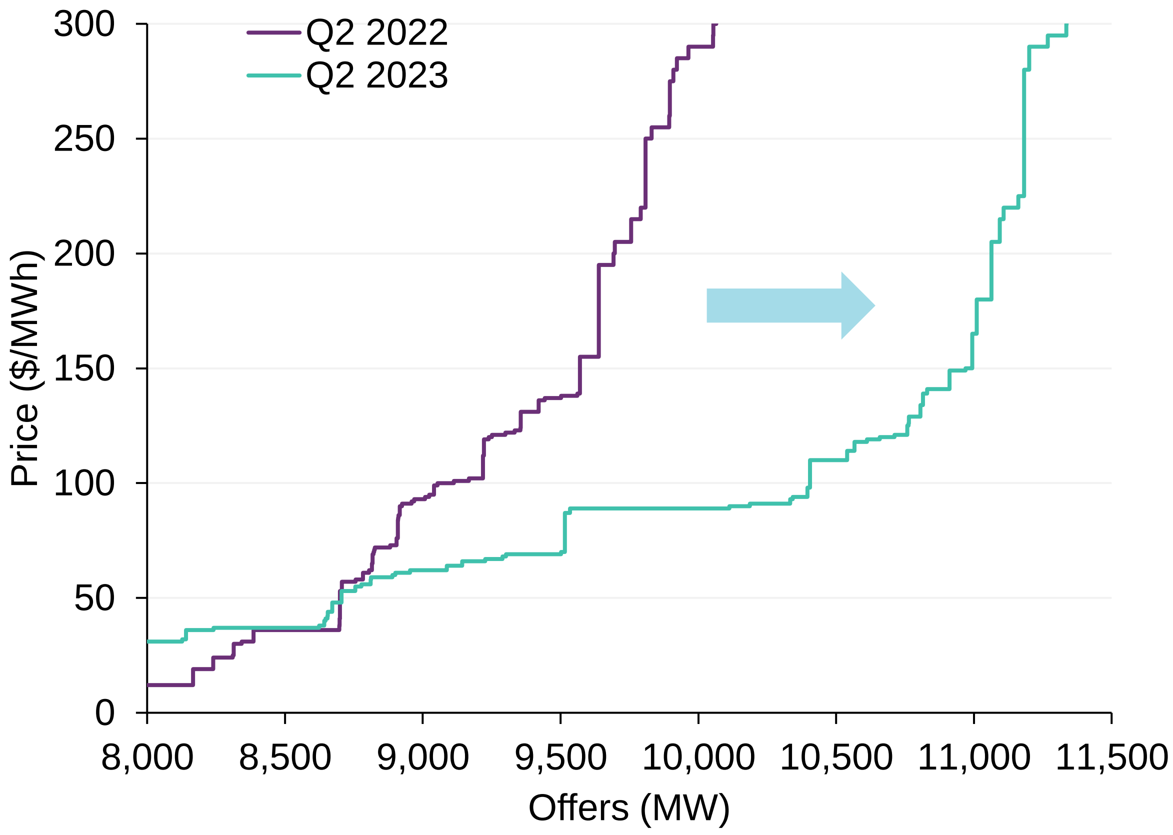
Significant reductions in the prices set by key fuel types

Mainland NEM price-setting frequency and average price set by fuel type – Q2 2023 vs Q2 2022



Increased black coal offer volumes at most price levels

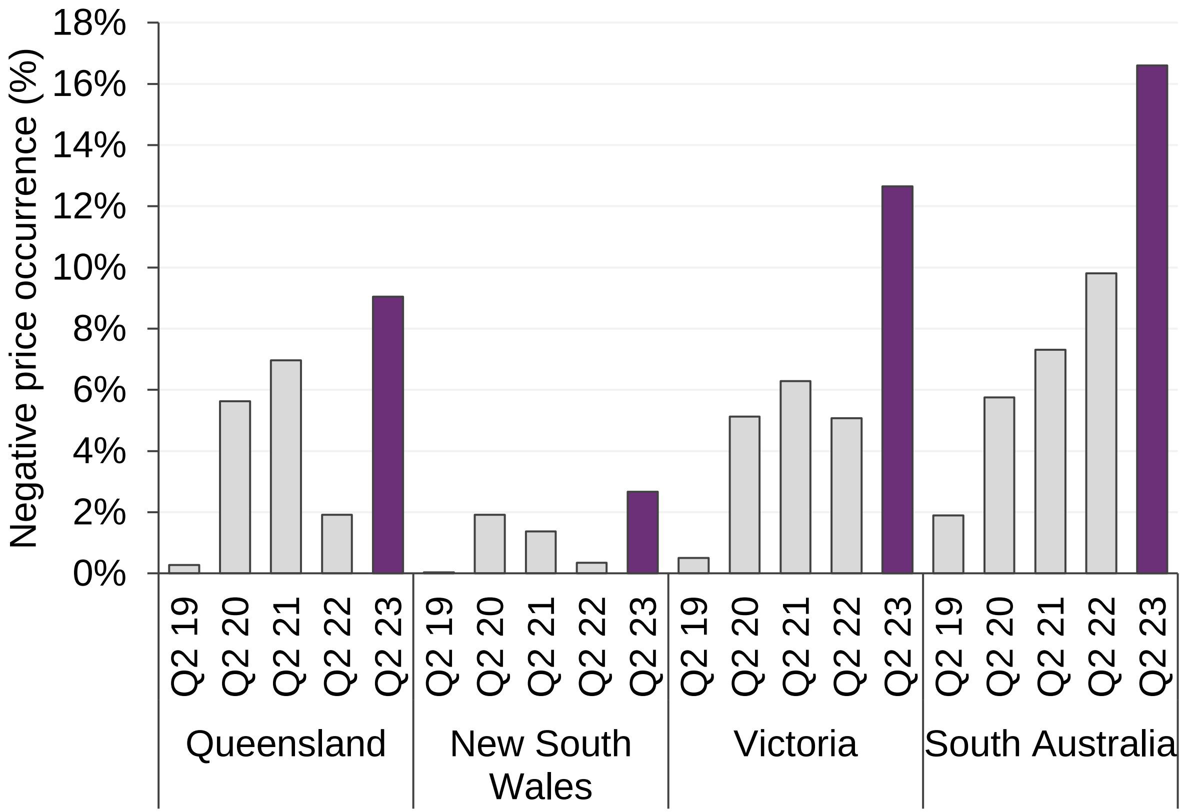
Black coal generation bid supply curve – Q2 2022 and Q2 2023



Negative Prices

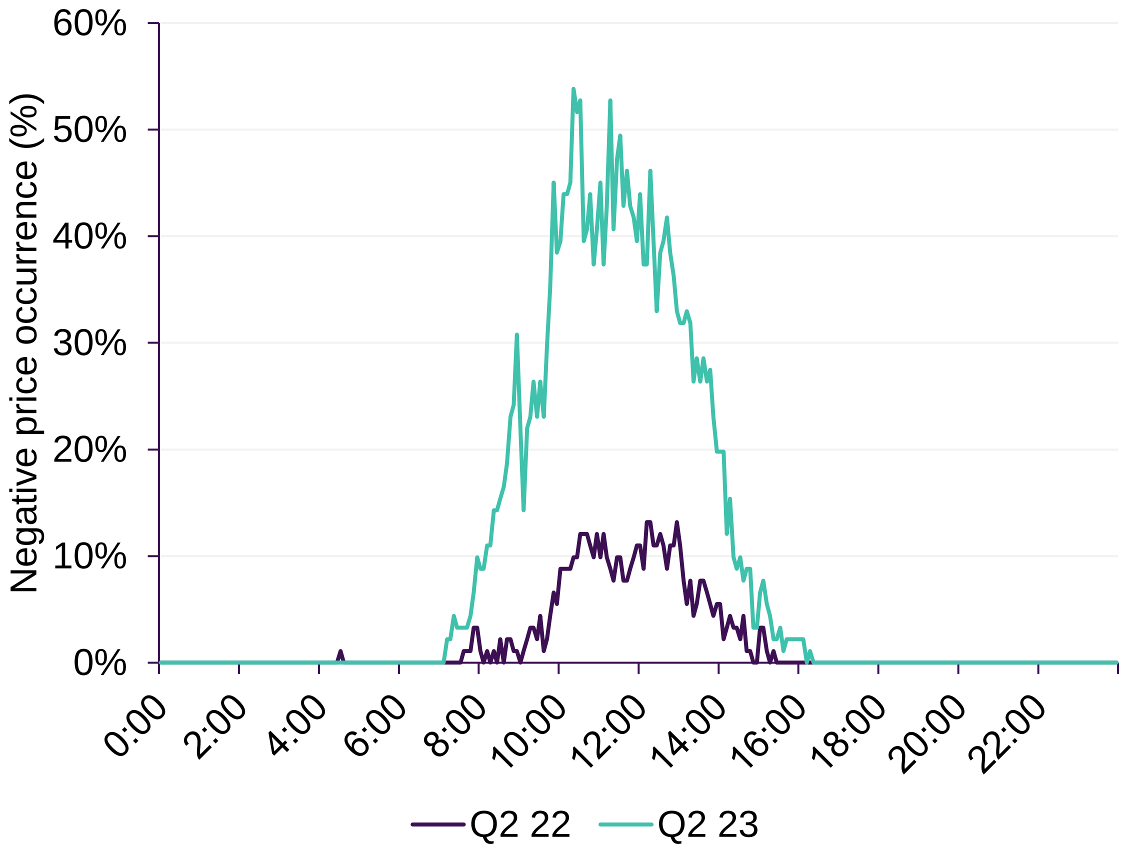
Record high Q2 negative price occurrence in all NEM mainland regions

Negative price occurrence in NEM mainland regions – Q2s



Sharp increase in QLD daytime negative price occurrence

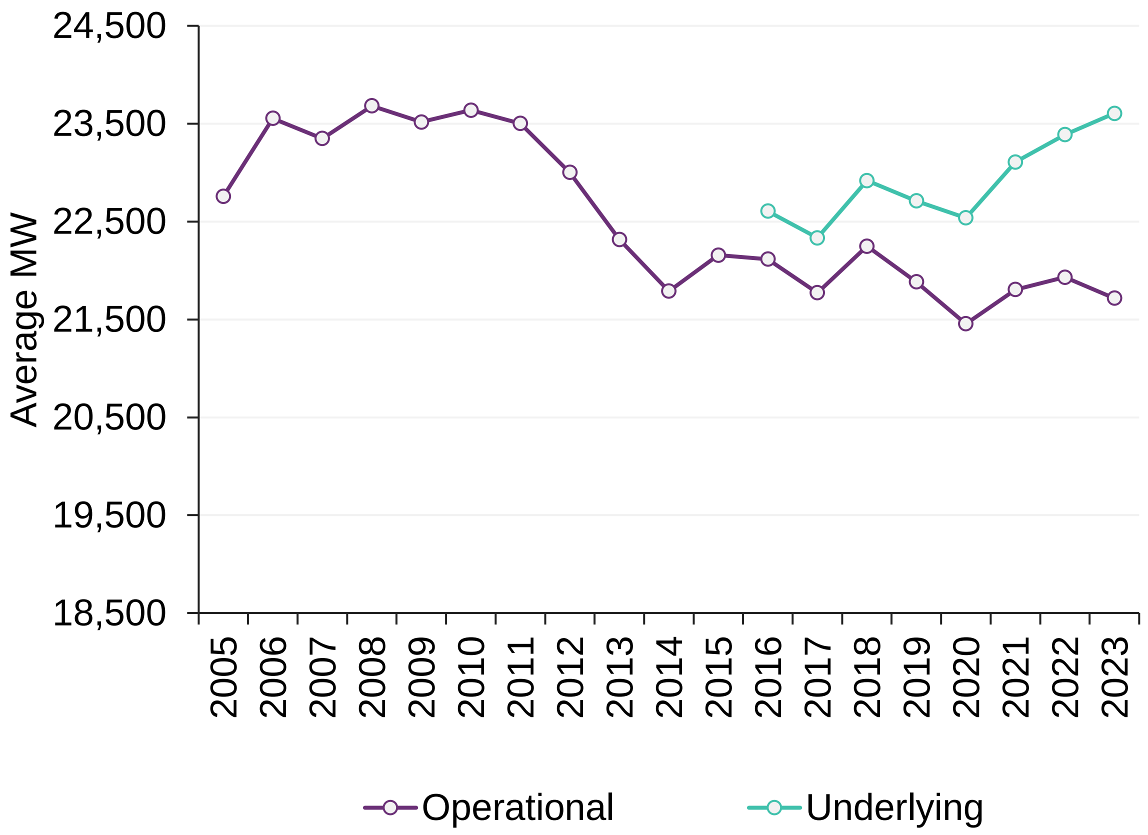
Occurrence of QLD negative price by time of day – Q2 22 vs Q2 23



Operational Demand

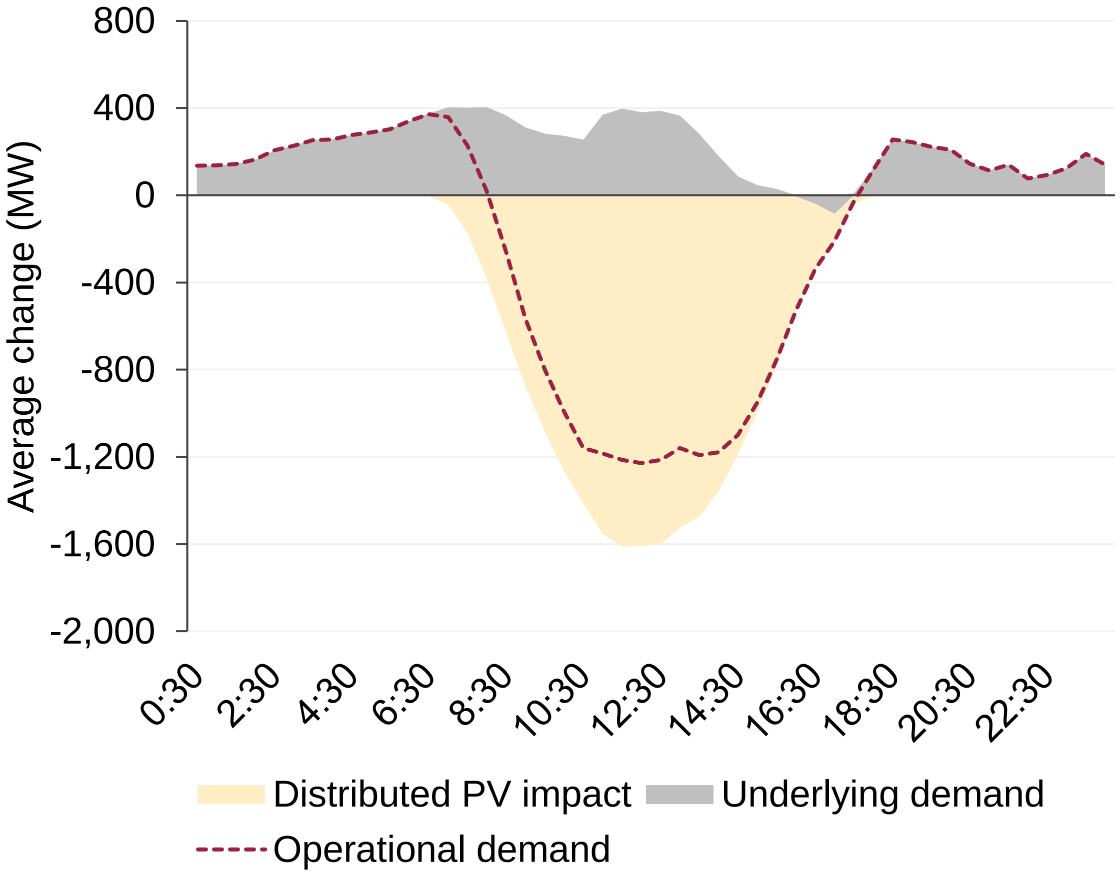
Rising underlying demand offset by high distributed PV output

NEM average operational and underlying demand – Q2s



Distributed PV reduced daytime operational demand

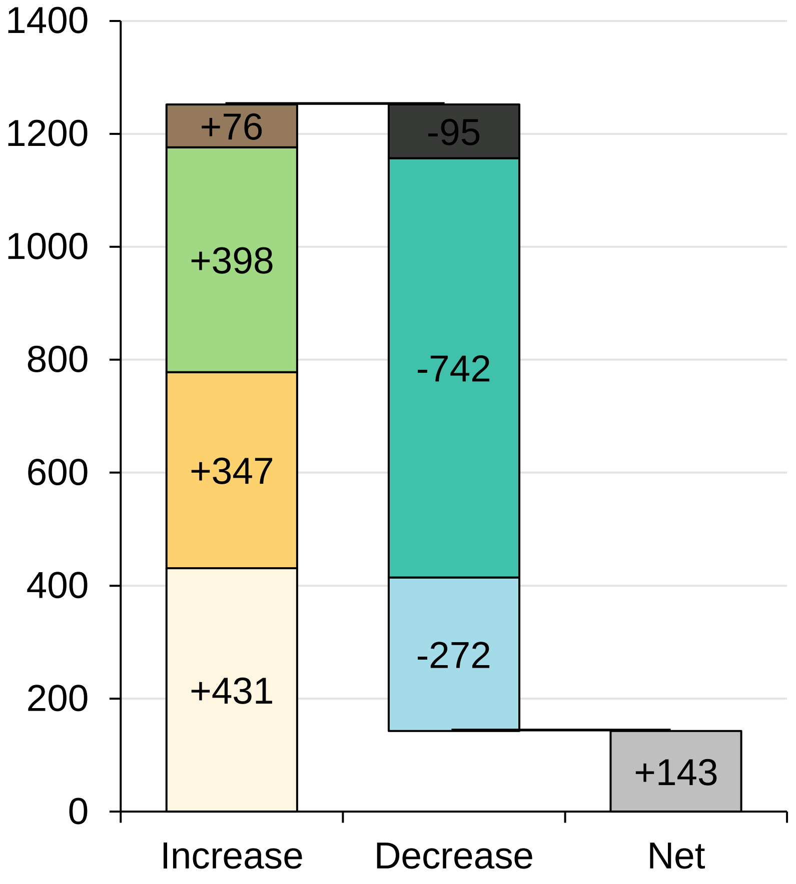
Change in operational demand – Q2 2023 versus Q2 2022

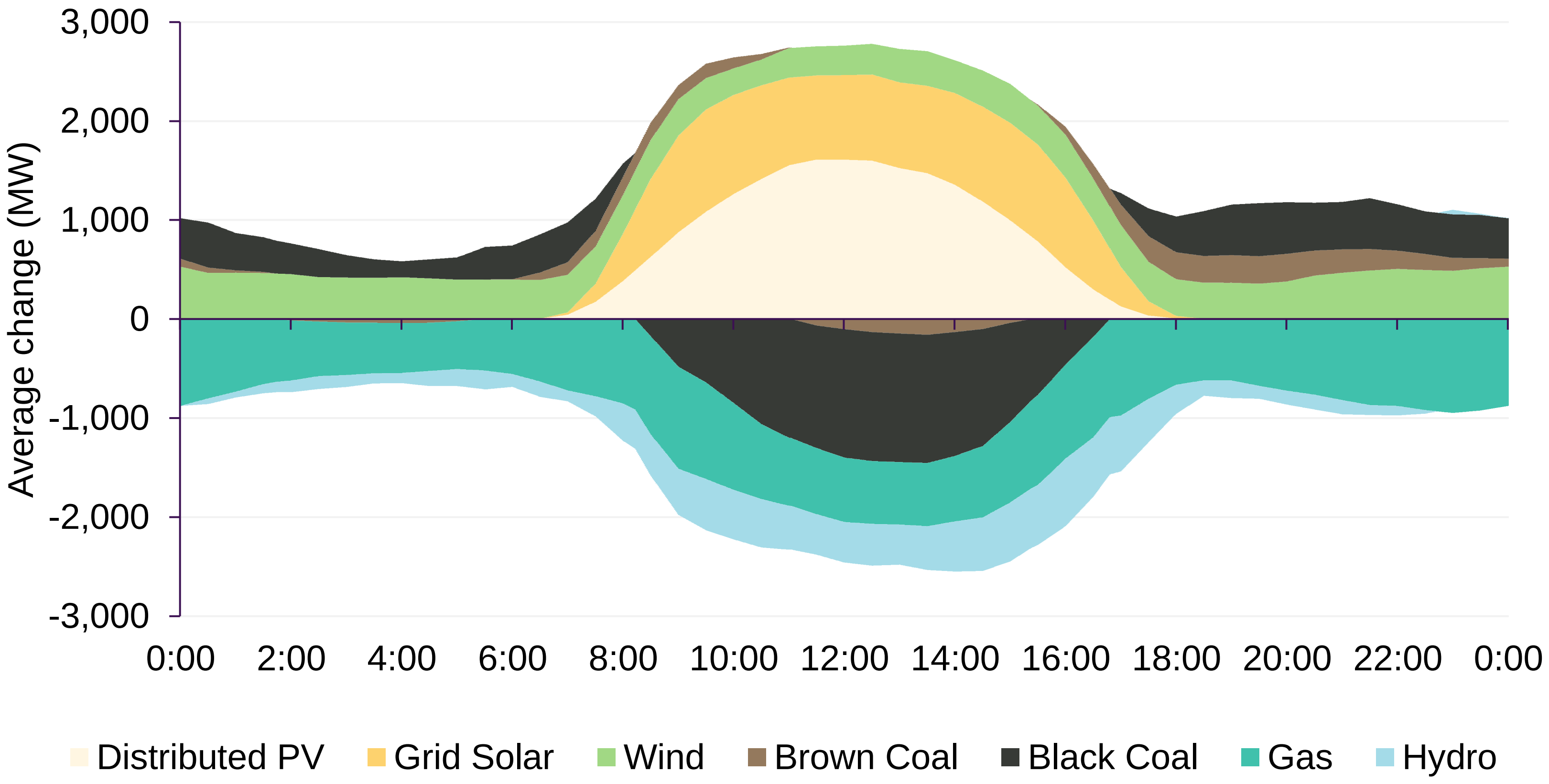


Generation changes

Large declines in gas-fired generation offset by increases in renewable output

Change in NEM supply by fuel source – Q2 2023 versus Q2 2022

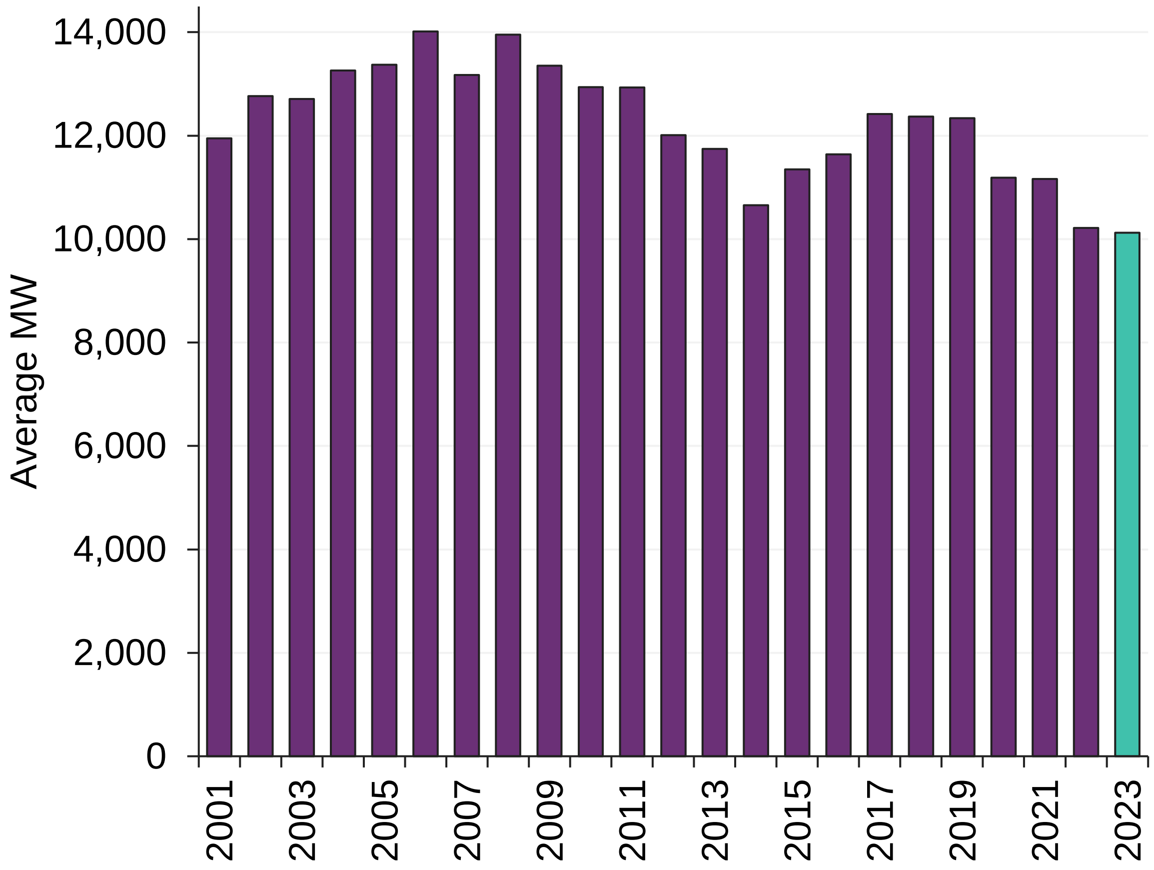




Black coal output

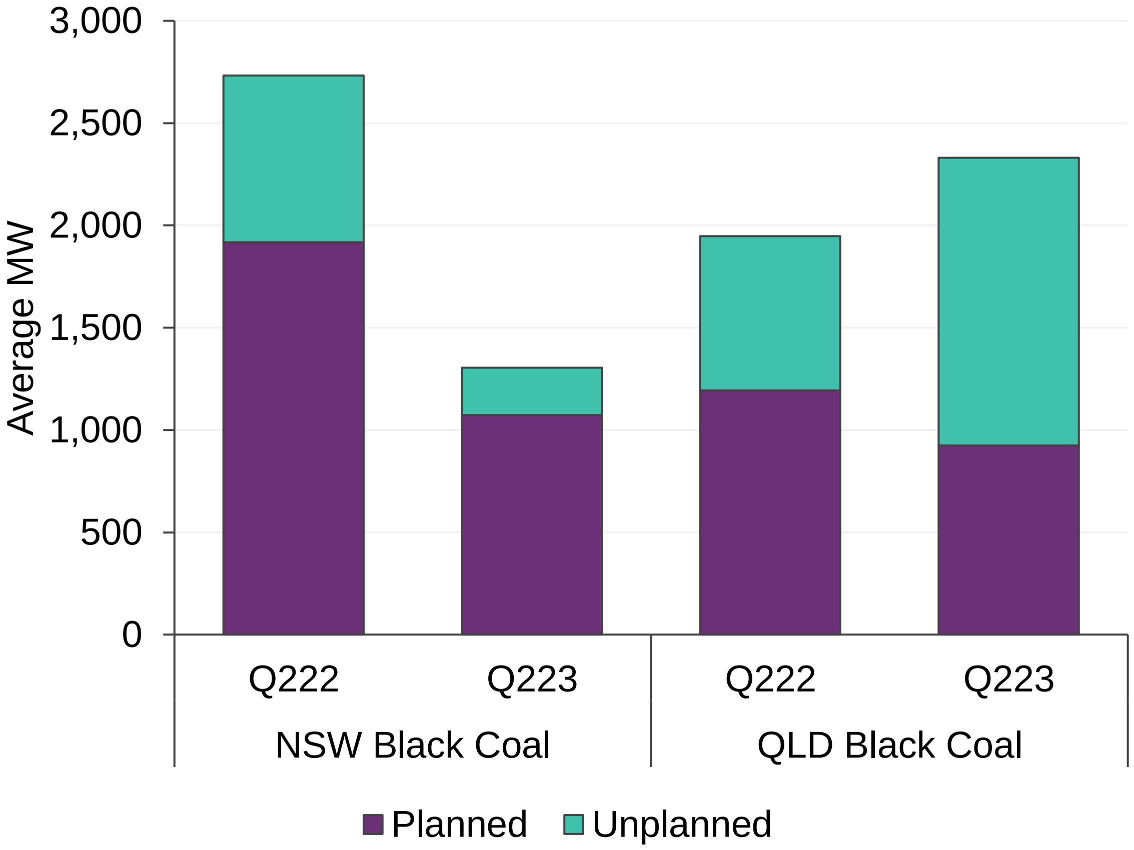
Lowest Q2 black coal-fired generation output on record

Quarterly average black coal-fired generation– Q2s



Coal-fired capacity on outage declined in NSW

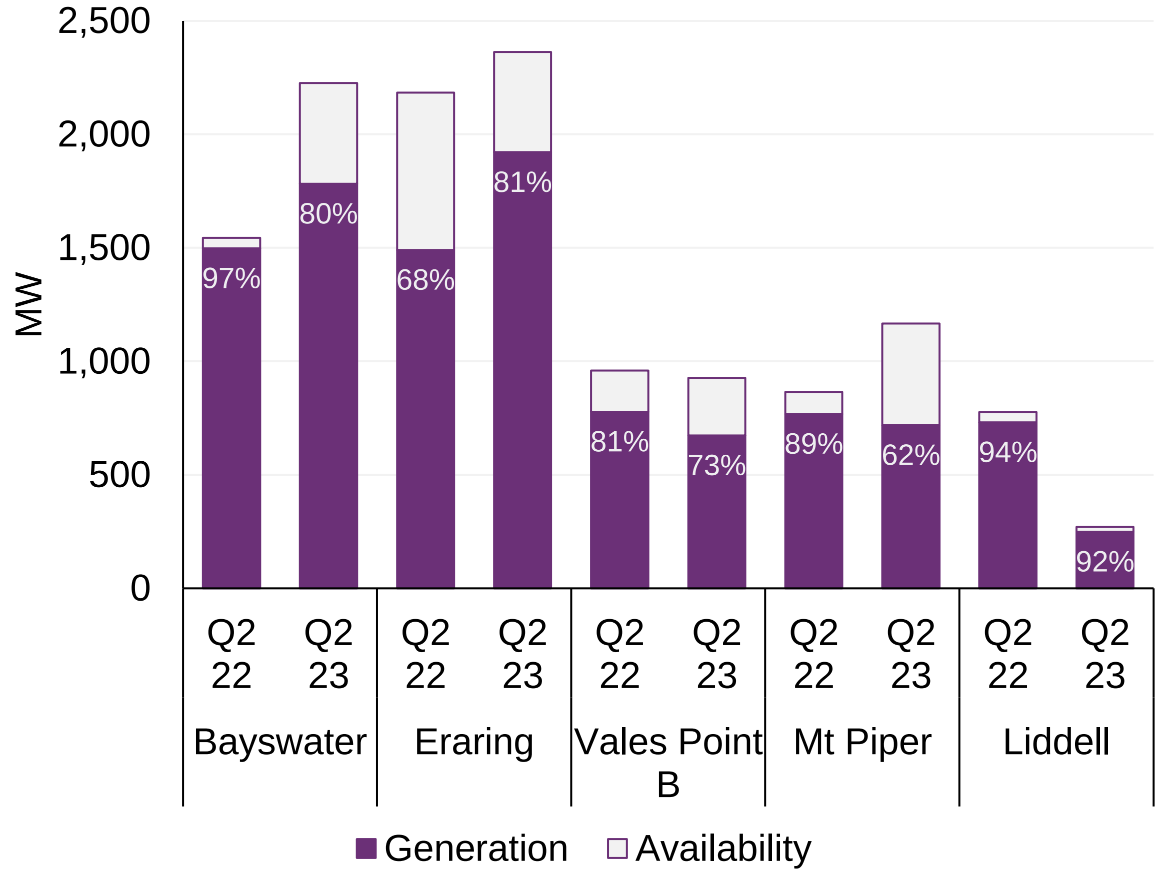
Average coal-fired capacity on outages – Q2 22 vs Q2 23



Black coal-fired generation

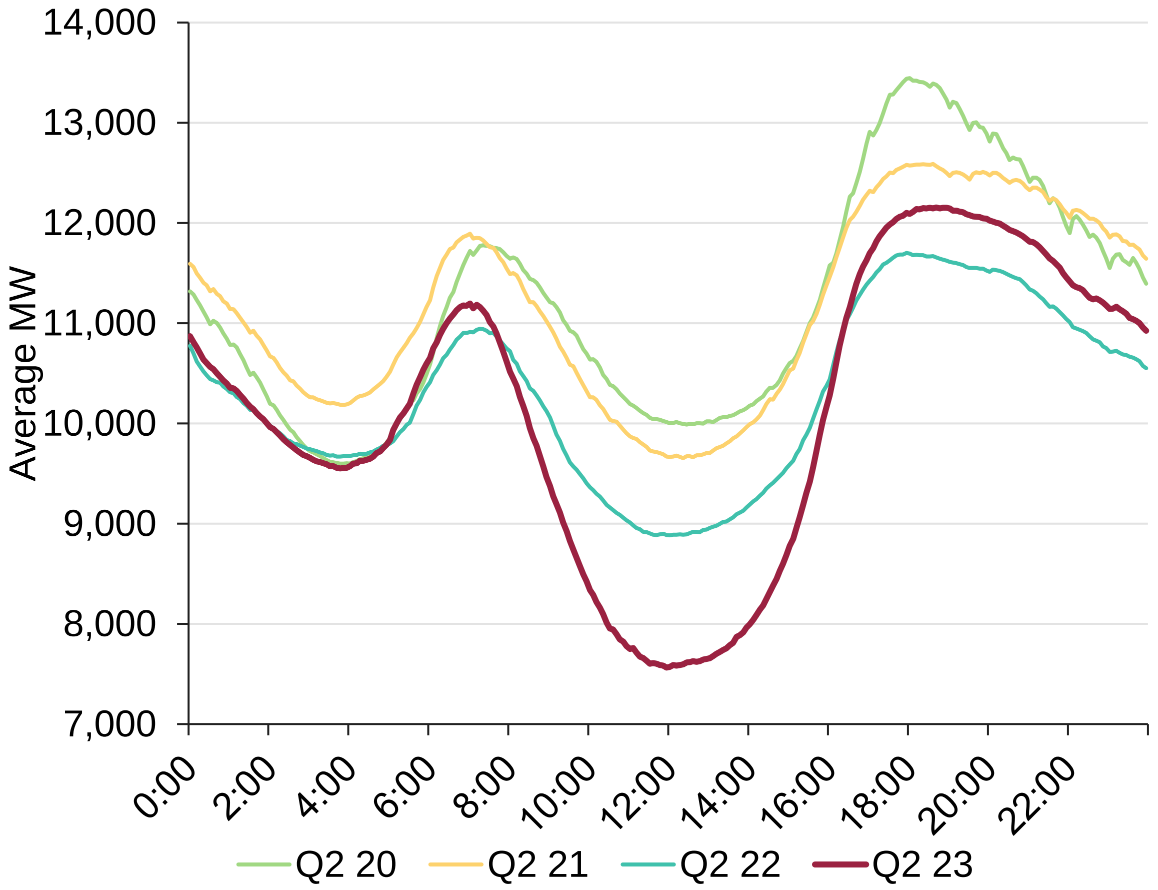
Bayswater and Mt Piper increased availability

Average quarterly availability and generation – Q2 2023 vs Q2 2022



Daytime black coal-fired generation continued to decline

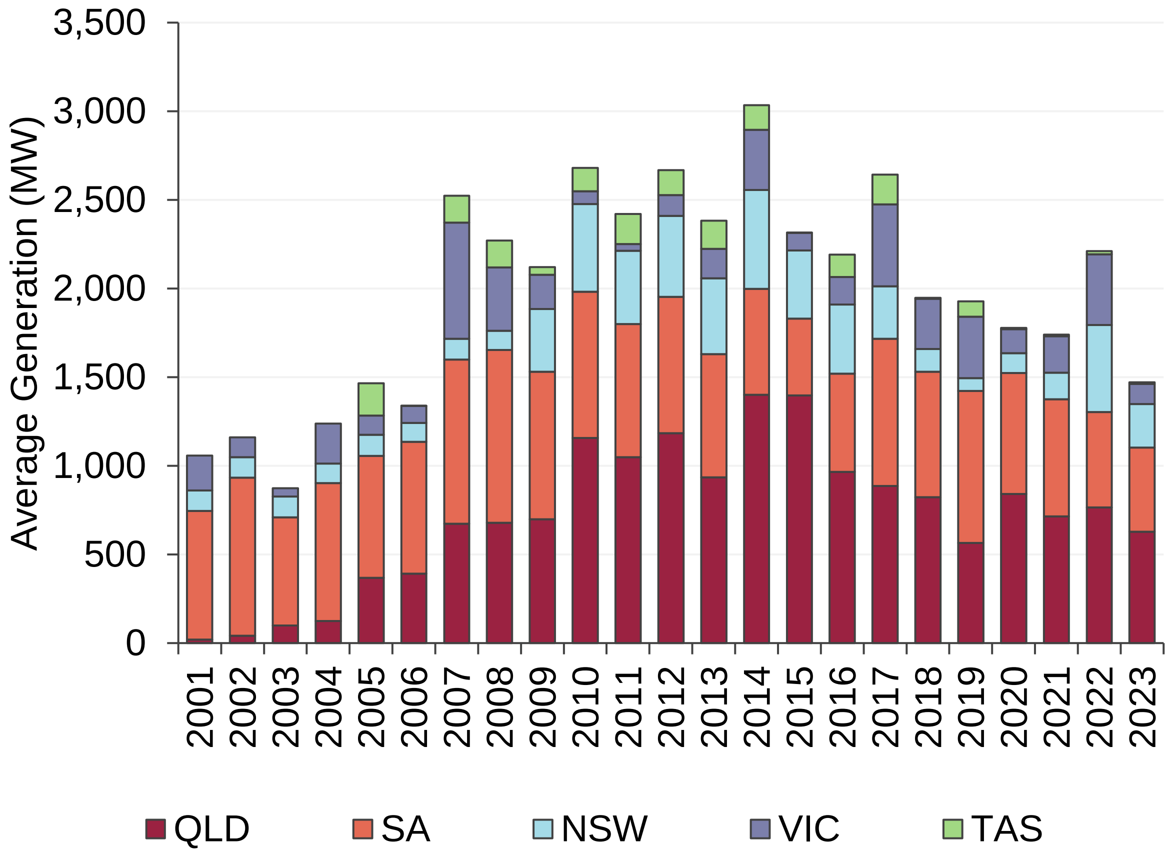
NEM black coal-fired output by time of day – Q2s from 2020 to 2023



Gas fired generation

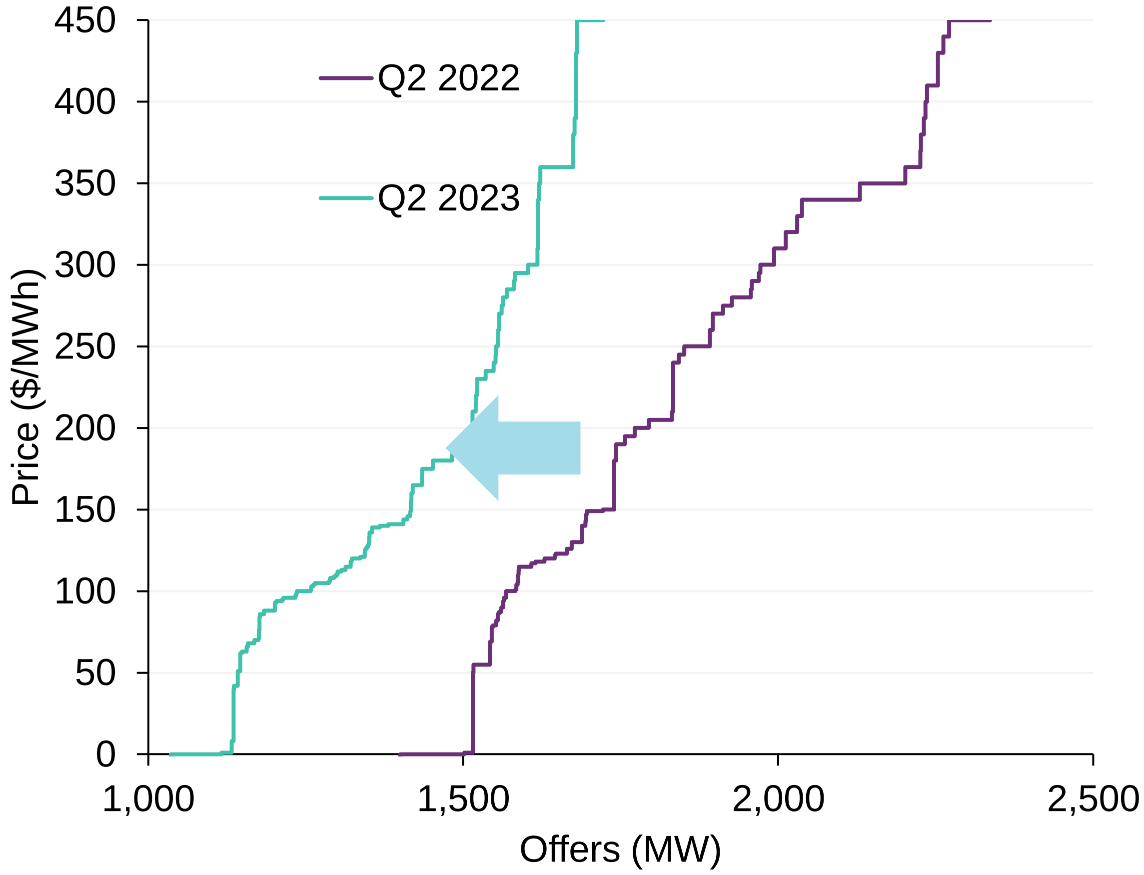
Gas-fired generation fell to lowest Q2 level since 2006

Average gas-fired generation by region – Q2s



Gas offer volumes decreased

Gas-fired generation bid supply curve – Q2 22 and Q2 23



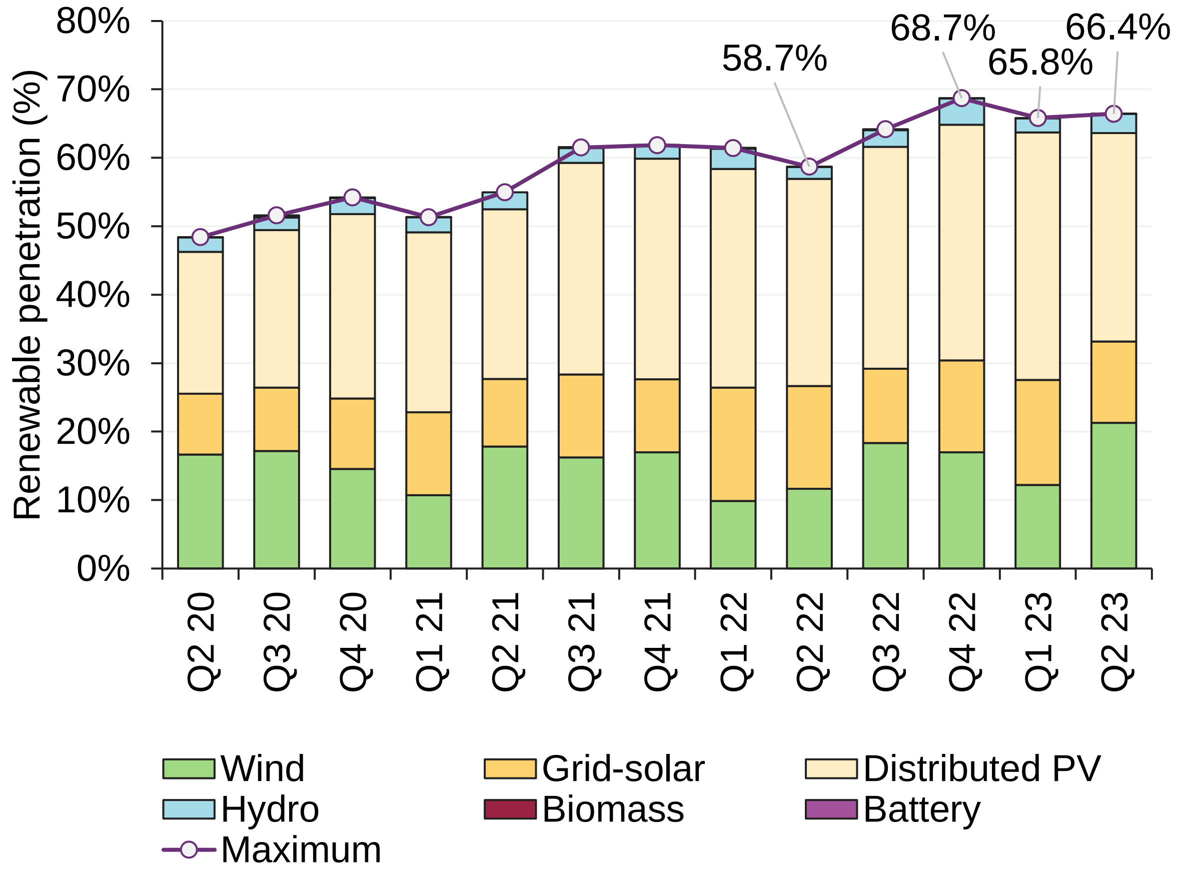
Wind and Solar output

VRE increased led by Qld grid-scale solar and Vic wind

Average MW change in output Q2 2022 to Q2 2023

Instantaneous renewable penetration rose from Q2 2023

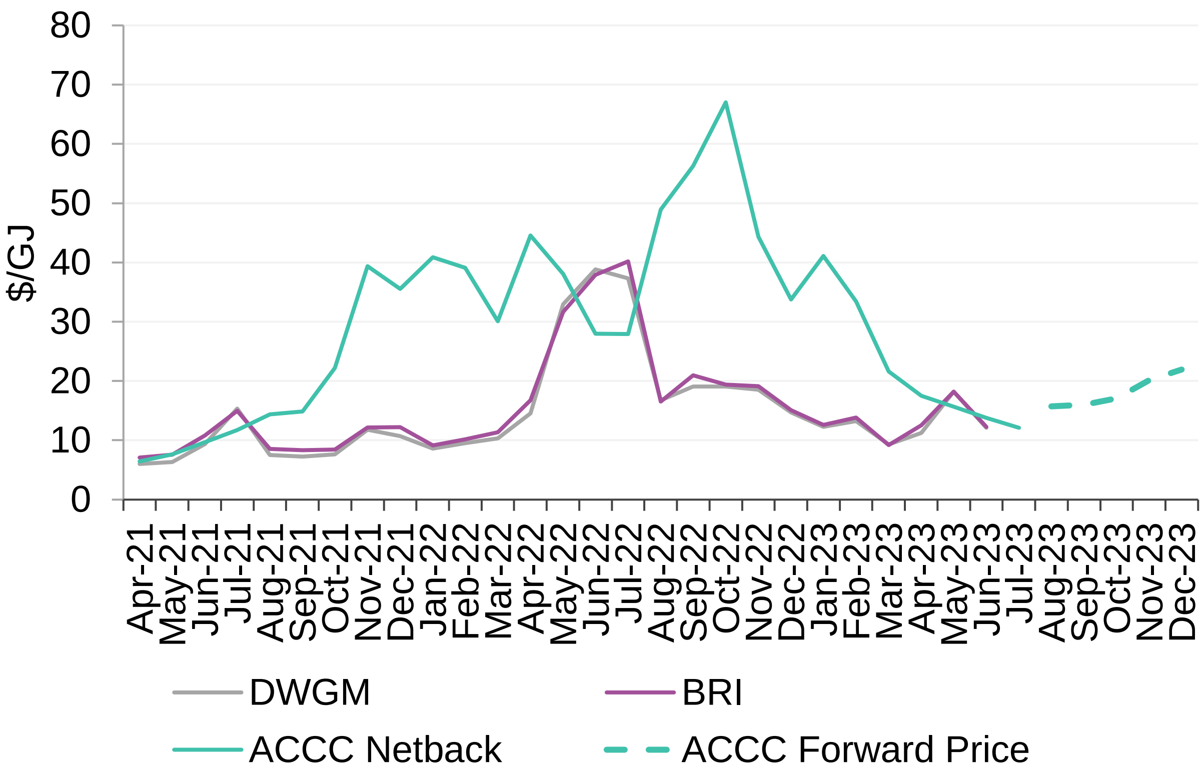
Peak instantaneous renewable energy output



East coast gas prices and demand

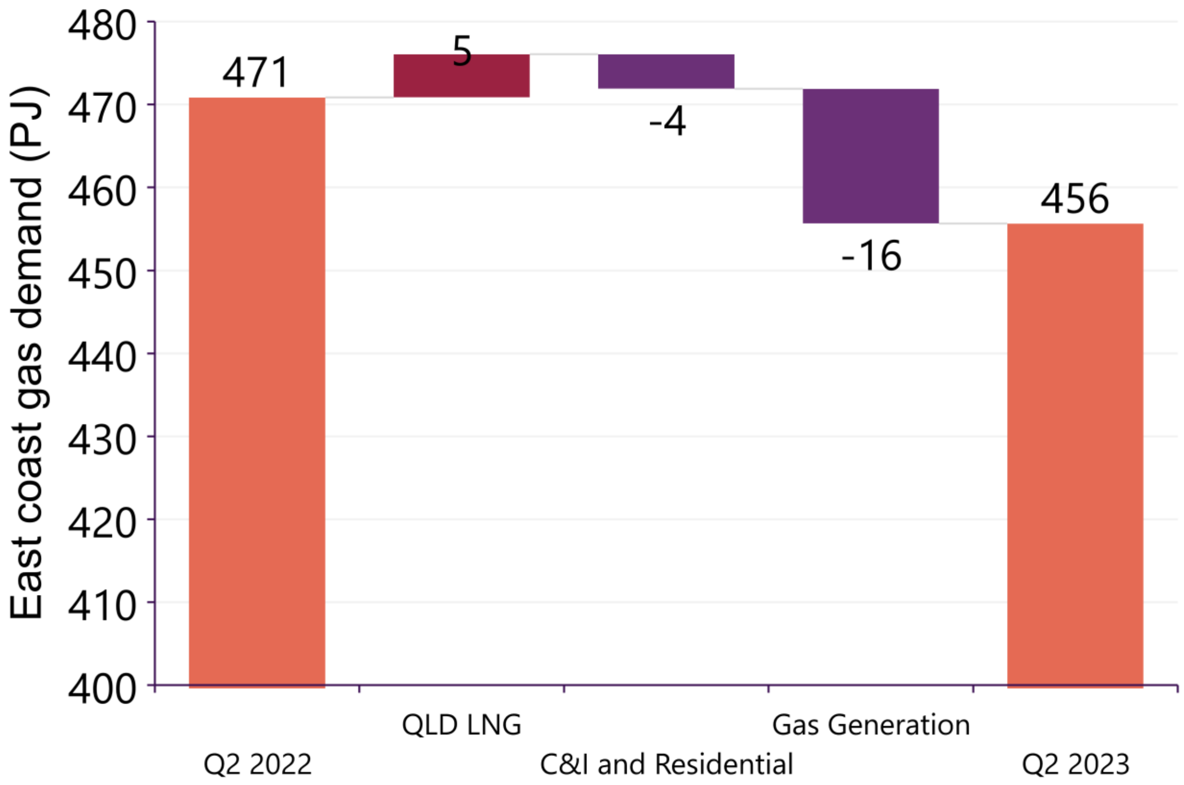
East coast gas prices at half Q2 2022 levels but still second highest on record

DWGM and Brisbane average price compared to ACCC LNG Netback price



Large gas-fired generation decrease the biggest contributor to lower east coast demand

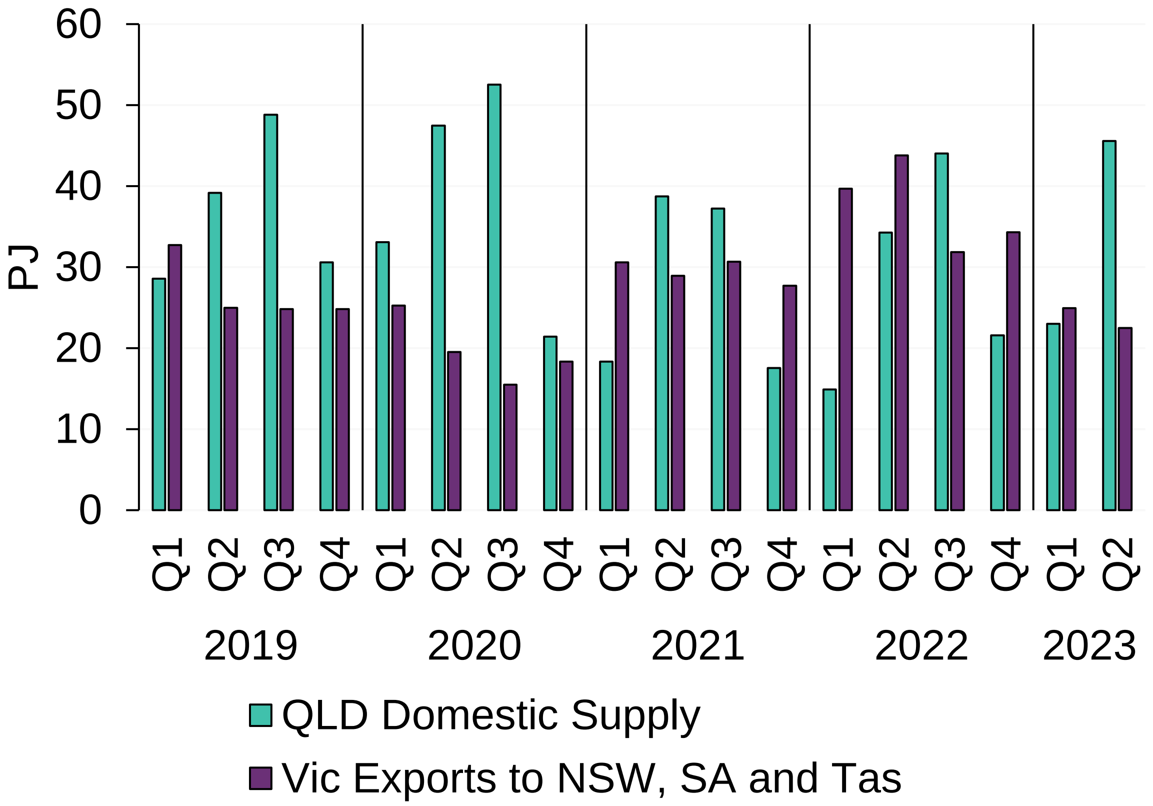
Components of east coast gas demand change – Q2 2022 to Q2 2023



Queensland domestic supply continues to replace Victorian exports

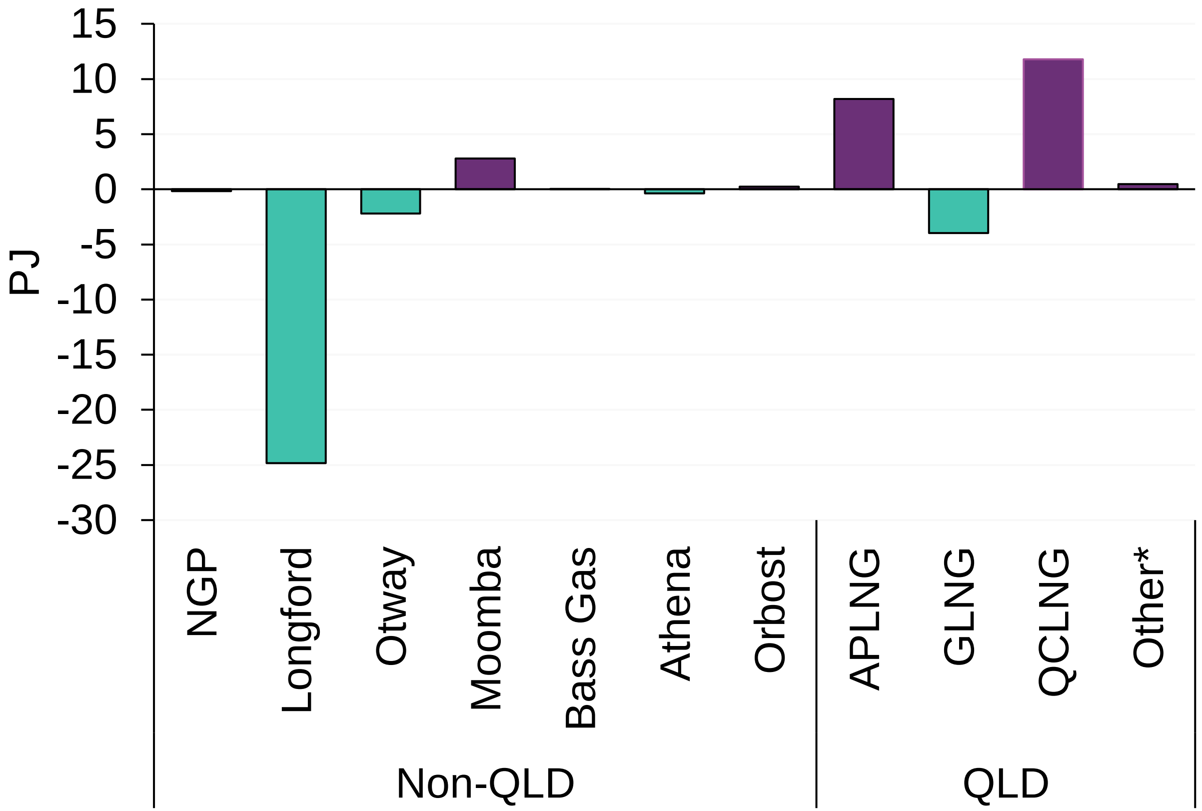
Large increase in Queensland domestic supply replacing Victorian exports

Queensland domestic supply compared to Victorian gas exports by quarter



Large production fall at Longford

Change in east coast gas supply – Q2 2023 vs Q2 2022



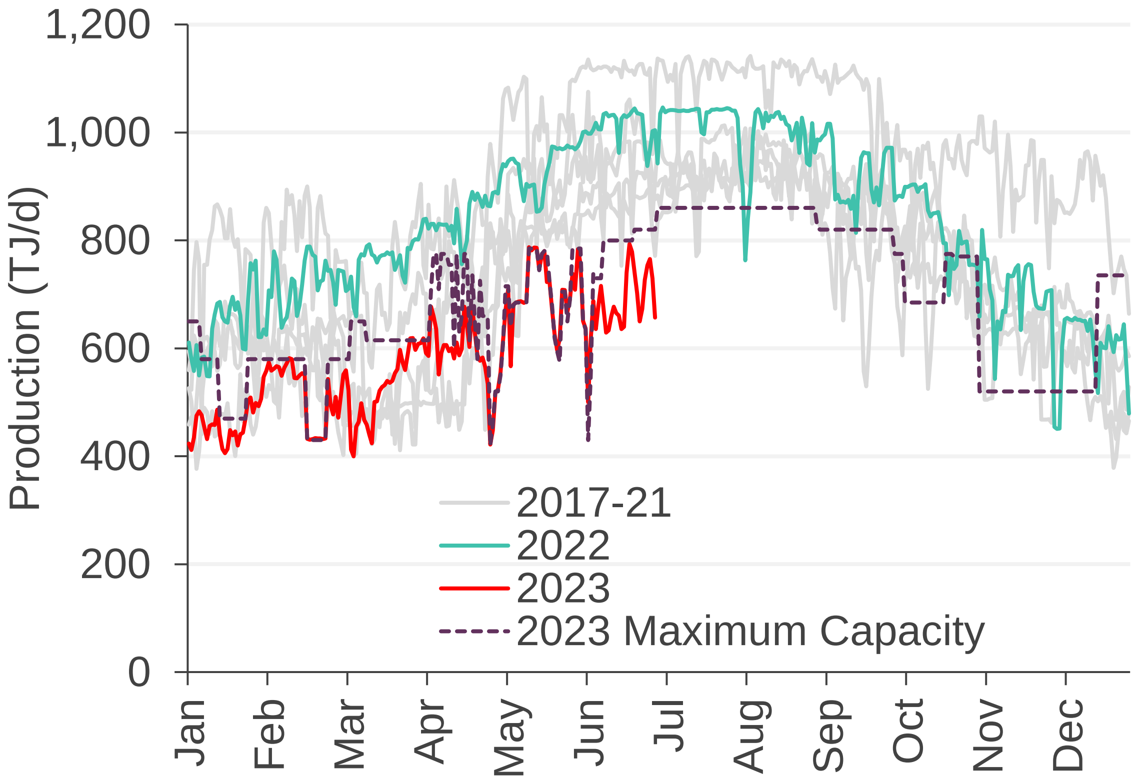
Longford aggregate and daily production in decline

Lowest Longford Q2 production since data reporting began

Longford Q2 production

Daily Longford production declining

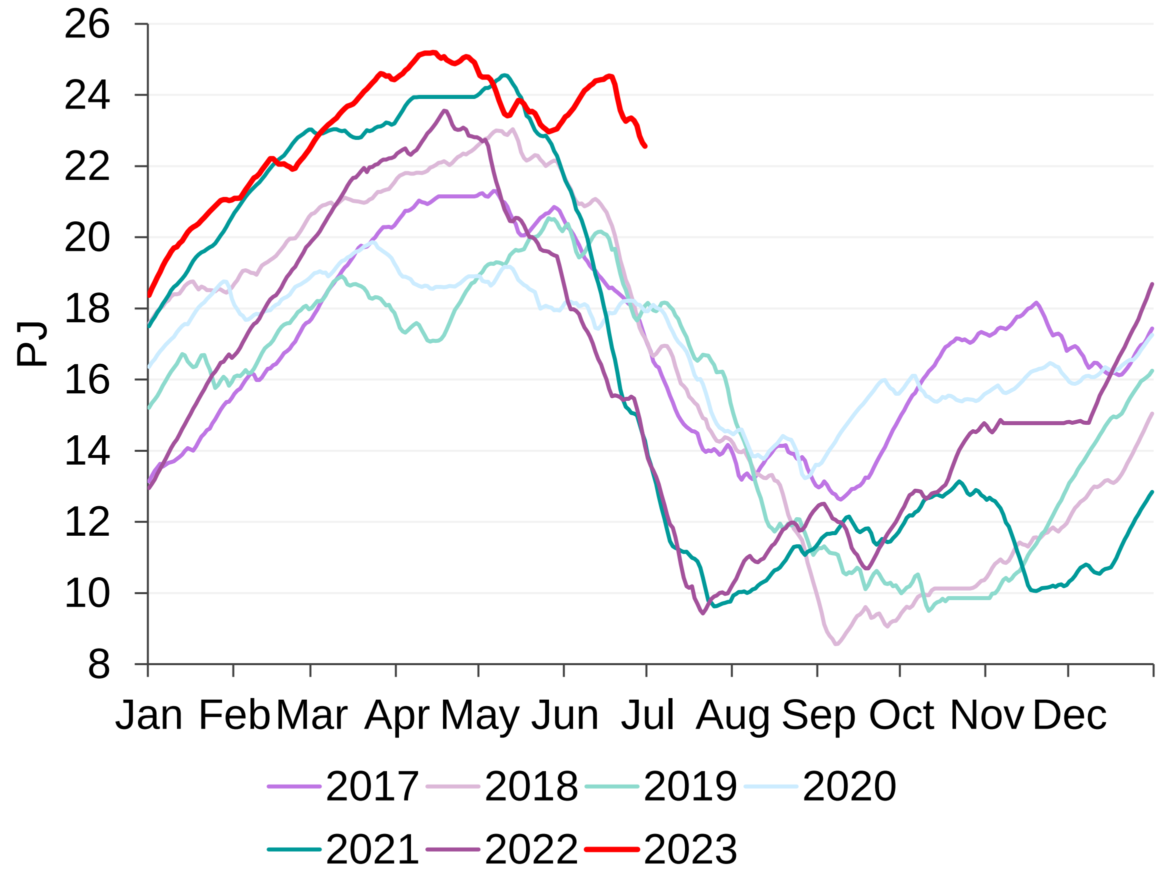
Daily Longford production 2017-2023, maximum capacity profile 2023



Iona Gas Storage levels at record high to end Q2

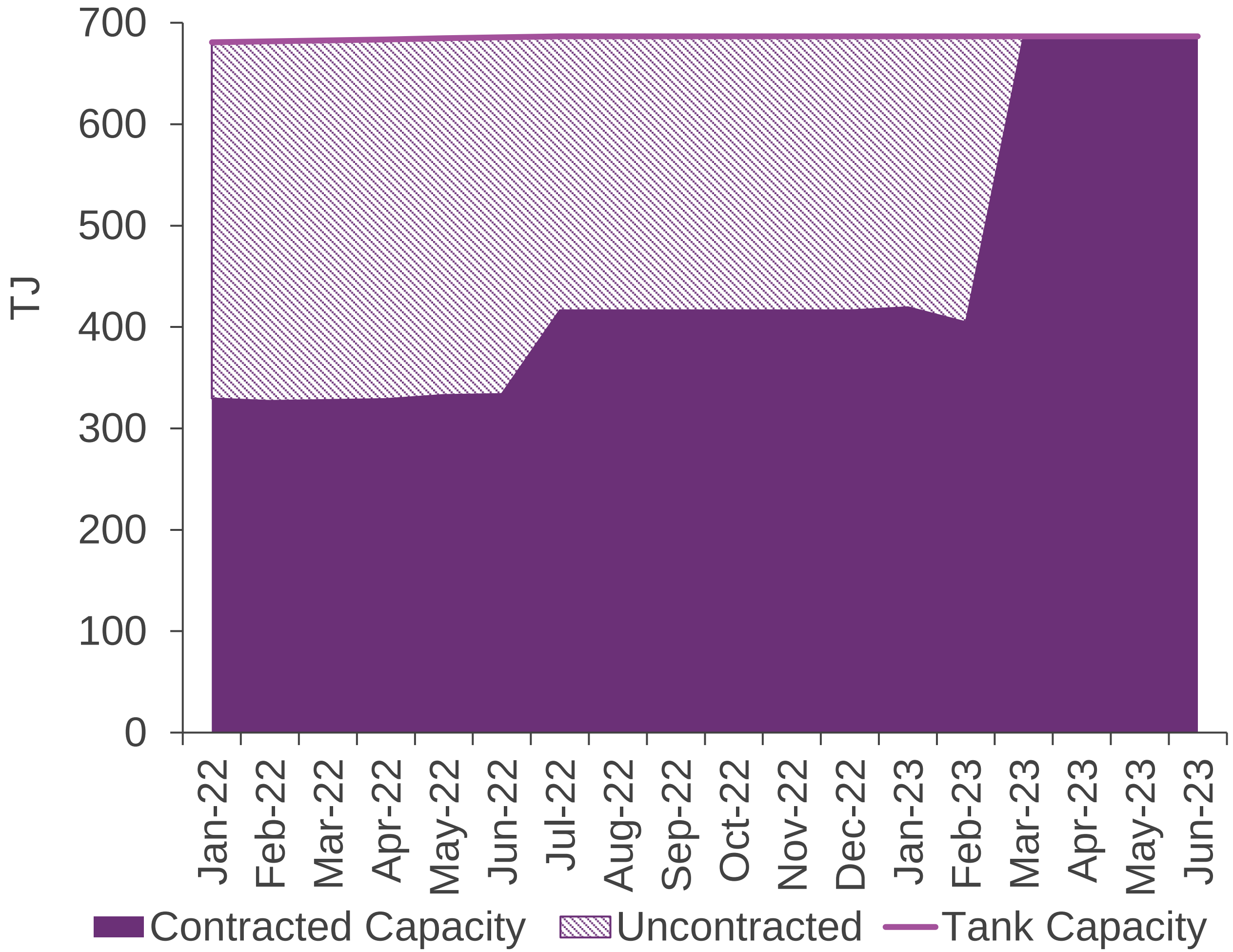
Iona storage level at highest end to Q2 since reporting began

Iona storage levels



Dandenong LNG contracted versus uncontracted capacity

Dandenong LNG contracted levels



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