

Quarterly Energy Dynamics Q4 2020 Observations

Presented to WA Electricity Consultative Forum

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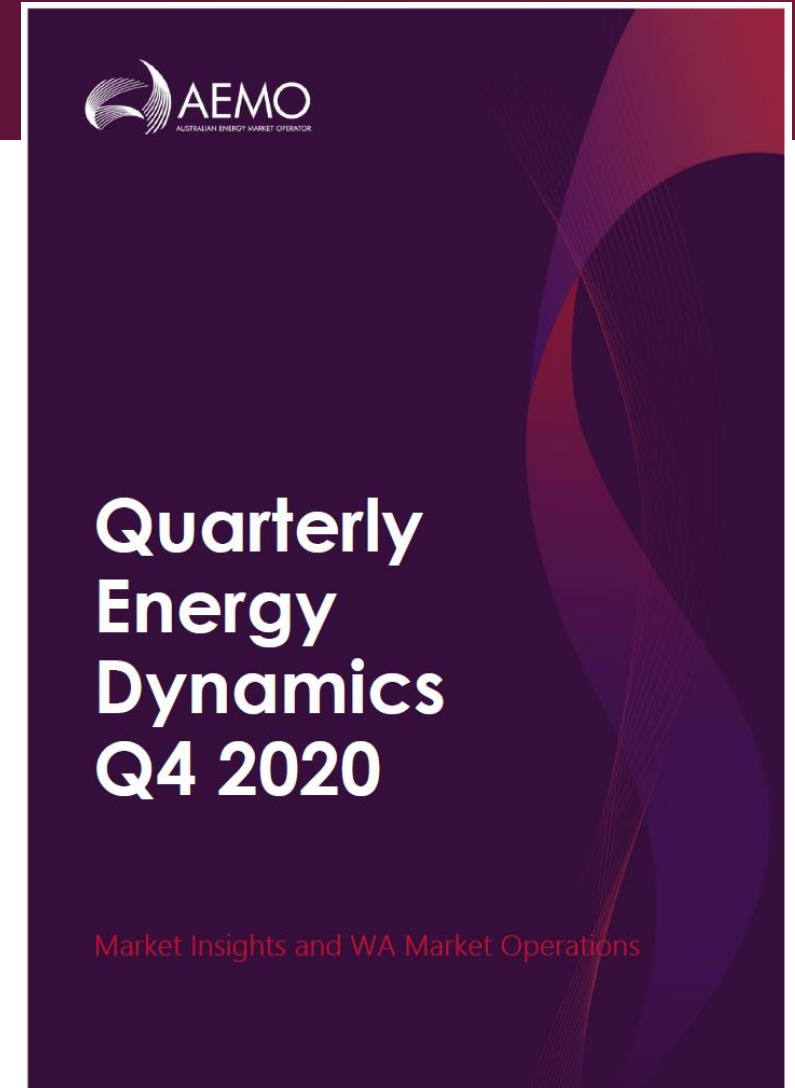
Executive Summary

Q4 2020 saw a continuation of recent electricity market trends:

- Increased grid-scale renewable generation and decline in thermal generation.
- Increased distributed PV lowering operational demand resulting in lower minimum demands.
- Increased incidence of negative prices.

Other impacts:

- Load Following Ancillary Service (LFAS) cost and price increased due to increase of requirement in Q4 2020
- Stable gas production in WA with a shift in producers.



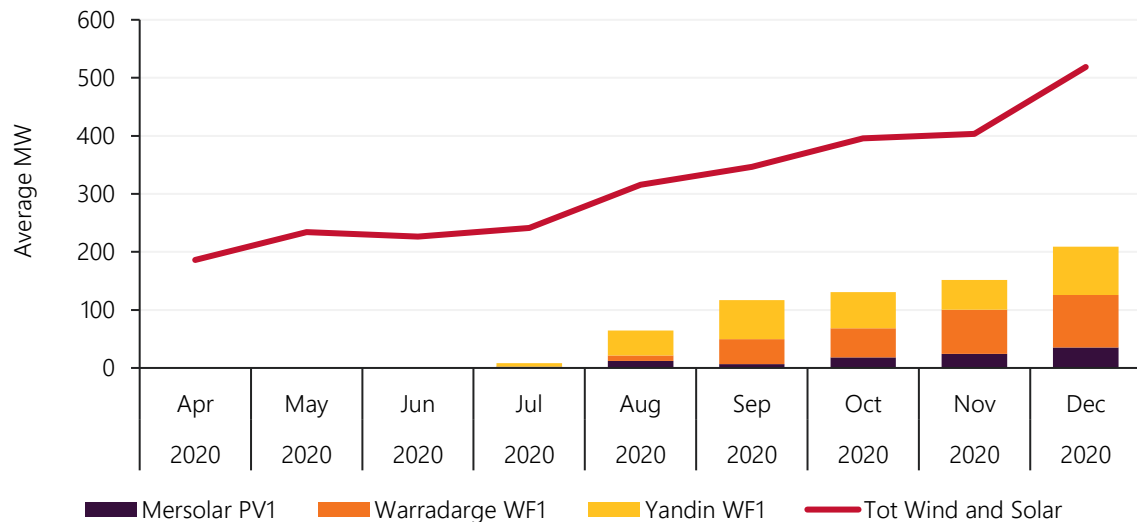
Available at <https://aemo.com.au/energy-systems/major-publications/quarterly-energy-dynamics-qed>

Variable renewable energy increases due to new facilities and ongoing rooftop PV growth

Generation from Non-Scheduled Generators connected in 2020 and total Non-Scheduled Generation

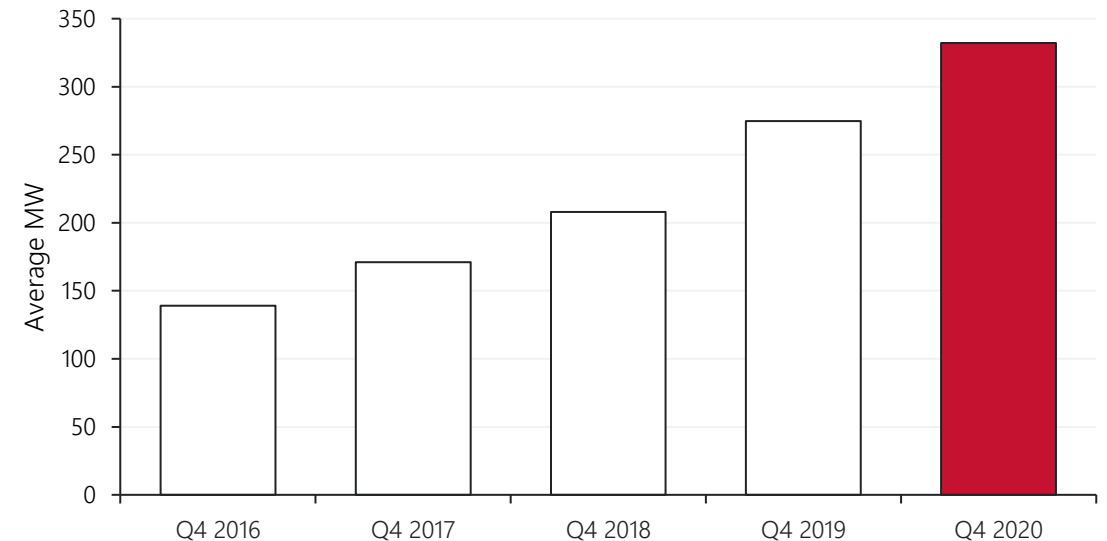
Wind generation increased due to connection of Yandin (212 MW) and Warradarge (180 MW) wind farms in Q4.

Grid solar generation increased due to connection of the 100 MW Merredin Solar Farm in Q4.



Distributed PV quarterly output – Q4s

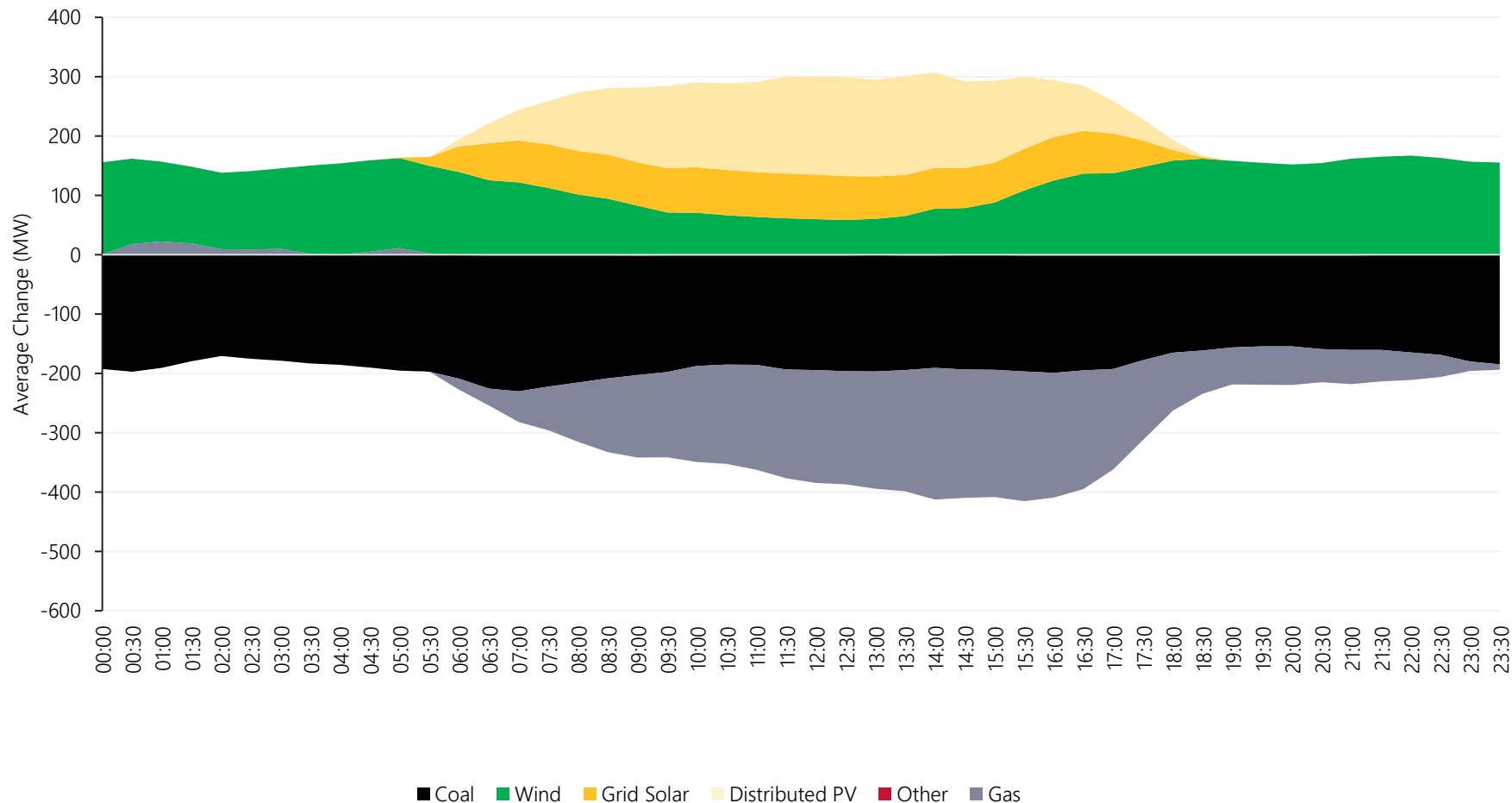
Q4 set another Rooftop PV generation record of 1,238 MW.



The increase in wind, solar and rooftop PV generation led to a record value of estimated variable renewable energy reaching 61.5% of instantaneous system demand on 3 October 2020.

Uptake in Non-Scheduled Generation and Rooftop PV causing a decline in coal and gas generation

Change in supply by time of day by fuel type – Q4 2020 versus Q4 2019



Wind generation increased on average by 123 MW (+45%) .

Grid solar generation increased on average by 35.5 MW (+505%) from 7 MW to 43 MW.

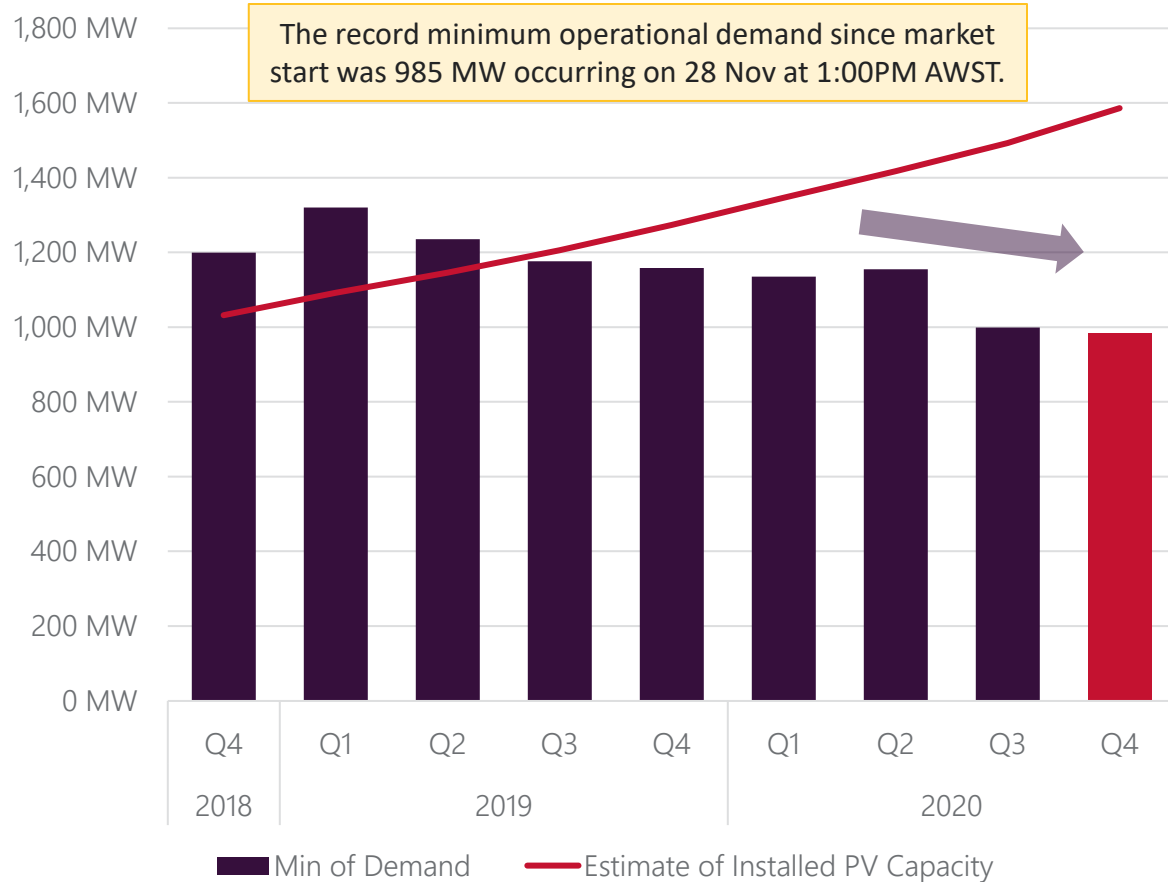
Estimated Rooftop PV generation increased on average by 57.5 MW (+21%).

Coal-fired generation decreased by 186 MW and gas generation by 89 MW.

On average, one less coal facility was operational through Q4 2020 compared to Q4 2019. This contributed to a record minimum quarterly generation percentage from the Synergy Balancing Portfolio (31% of total generation, 10% less compared to Q4 2019).

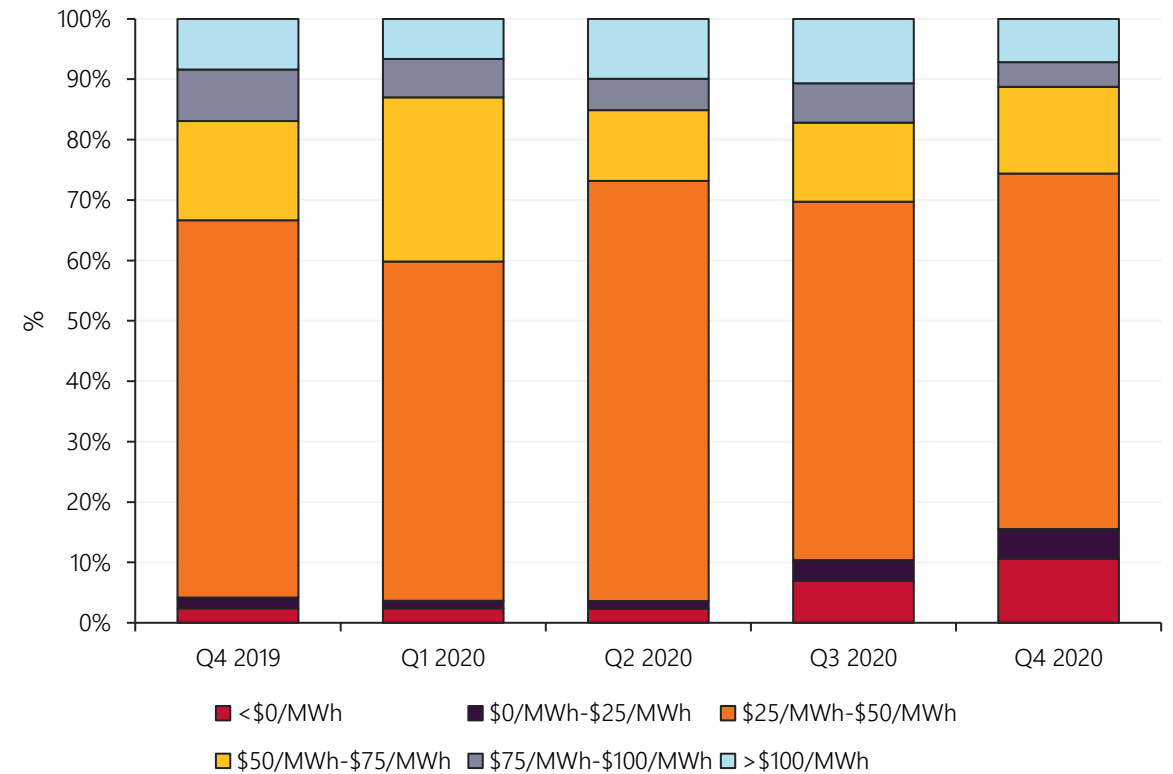
Record minimum demand and negative price events continue

Operational Demand & Rooftop PV Capacity



2020 set the record minimum quarterly operational demand for each quarter since market start.

Balancing Price distribution

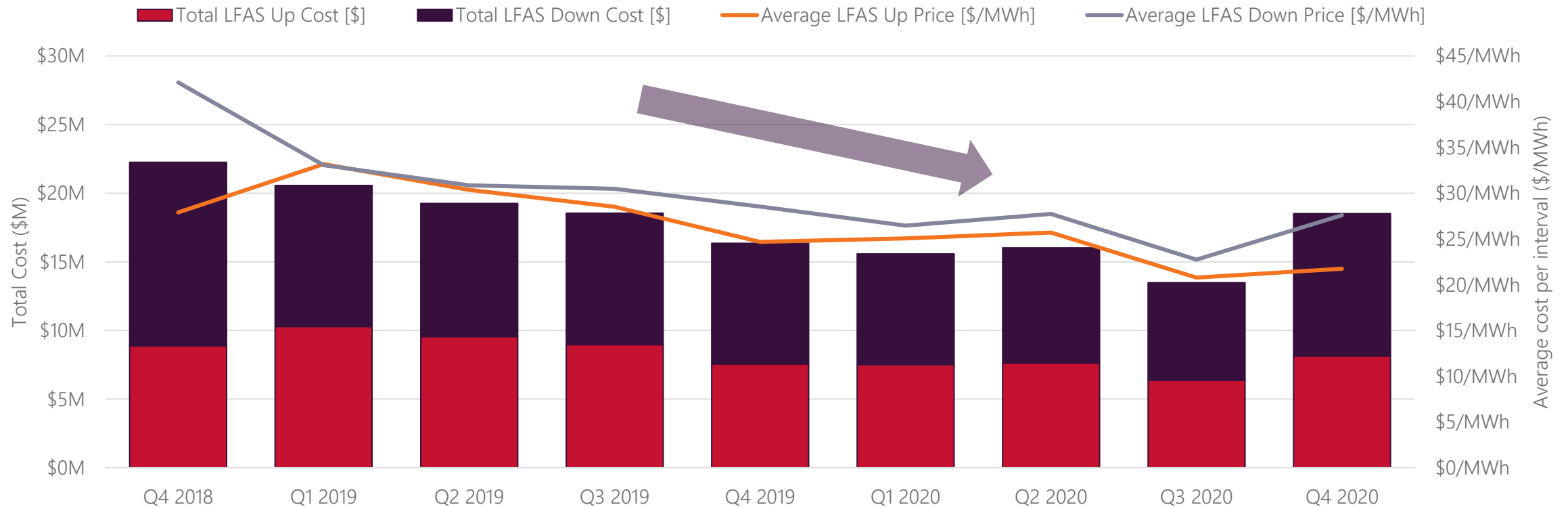


Q4 2020 average Balancing Price decreased by 13% relative to Q3 2020 (lowest average since Q2 2015).

4.5 times more negatively priced intervals in Q4 2020 than in Q4 2019, with over 10% of total intervals being negatively priced.

LFAS costs increase due to increase requirements in Q4 2020

LFAS Costs and LFAS Prices

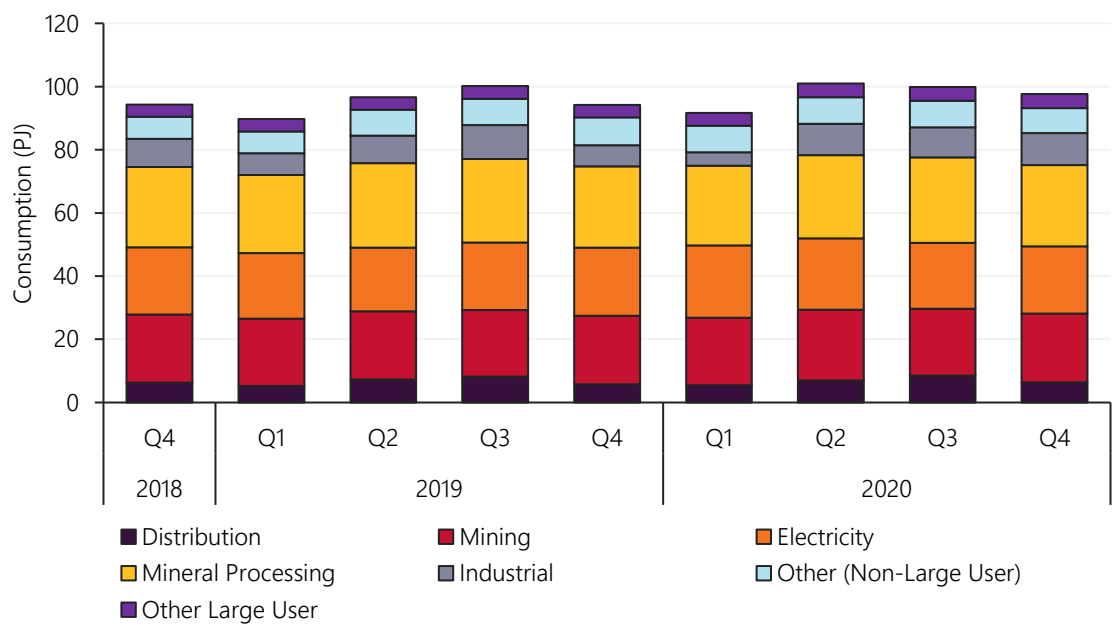


AEMO introduced a 'sculpted' approach to LFAS procurement in Q3 2019 to reflect greater variability of rooftop PV. The average LFAS quantity was about the same, however the quantity increased during daylight hours and reduced at other times. Combined with increased competition in the LFAS market (3 new facilities providing LFAS compared to start of 2019), this led to more efficient dispatch across energy and LFAS and a decrease in total LFAS costs.

The sculpted LFAS Requirements were increased for Q4 2020 due to the connection of new wind and solar generators. Accordingly, LFAS costs and prices increased between Q3 and Q4 2020. Total costs were similar to costs prior to the introduction of sculpted LFAS, when the LFAS requirement was lower on average. This was likely due to the greater participation in LFAS through 2020.

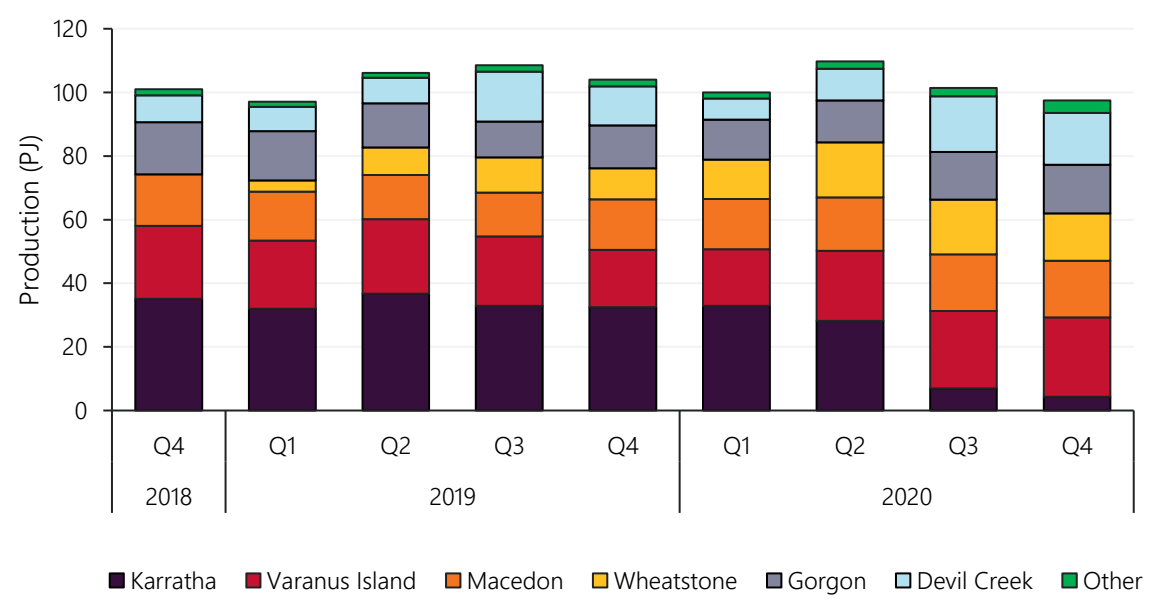
Stable gas production in WA with a shift in producers

WA quarterly gas consumption by industry



In Q4 2020, total gas consumption slightly increased by 3.7% relative to Q4 2019 levels. The 10PJ increase in industrial consumption was offset by a 21PJ decrease in electricity consumption.

WA quarterly gas production by facility



In Q4 2020, total gas supply decreased by 6% relative to Q4 2019 levels. Karratha Gas Plant production continues to decline, while Varanus Island, Devil Creek and Macedon plants increased.

Questions and Feedback

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