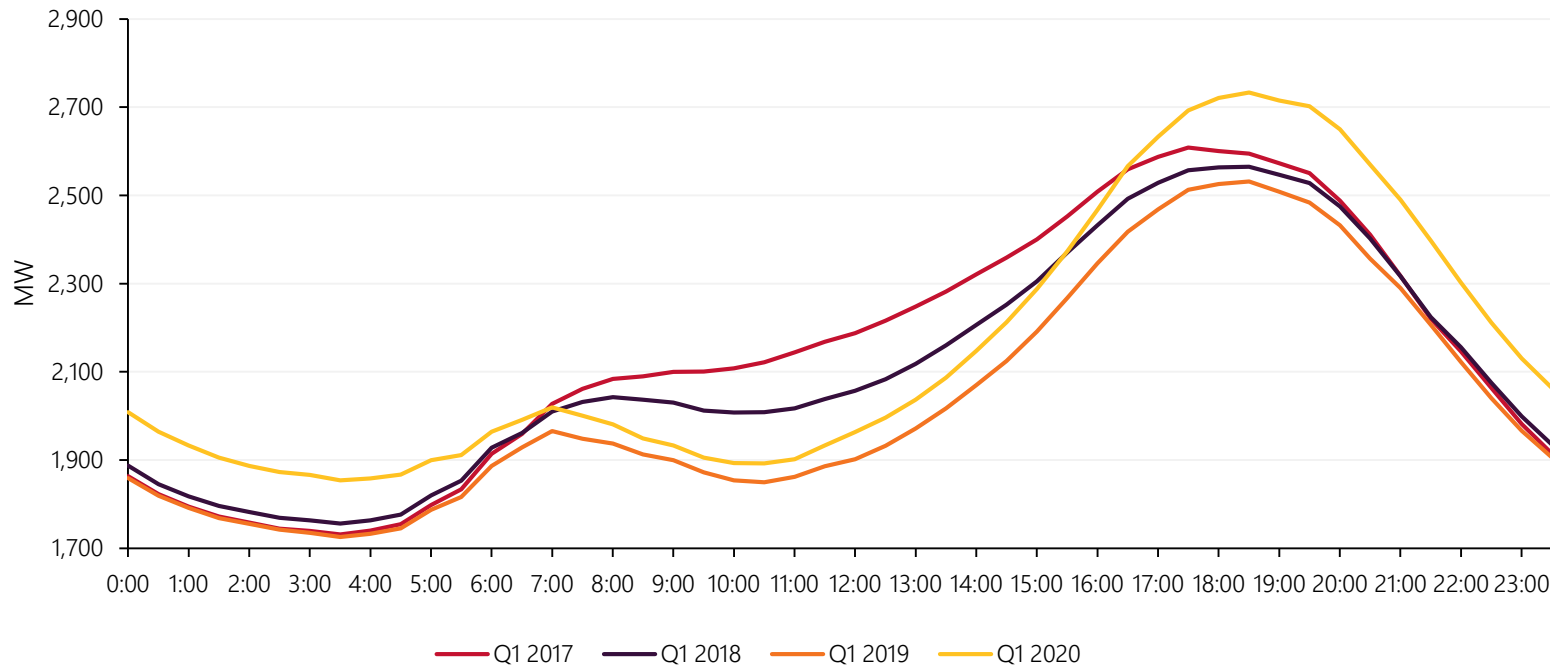


# Q1 2020 Quarterly Energy Dynamics Report

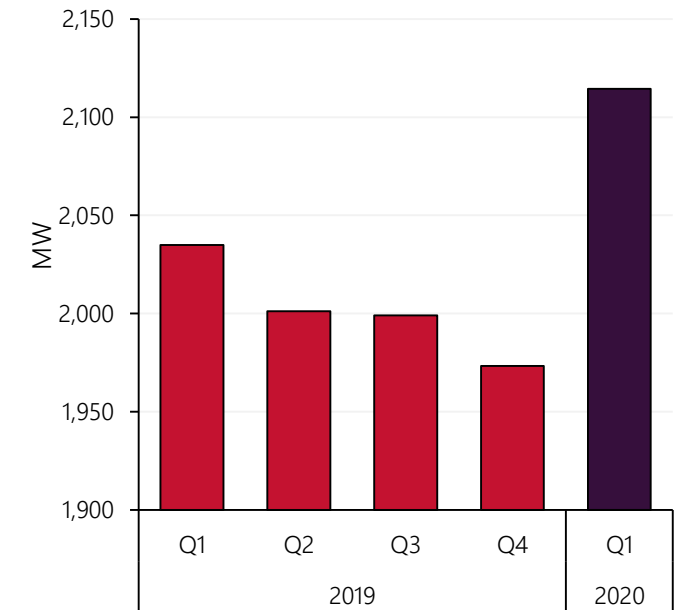
Nicholas Nielsen – Market Analyst, WA Market Operations

# High overnight temperatures drive high average demand

Q1 hourly average operational demand by year



Average operational demand

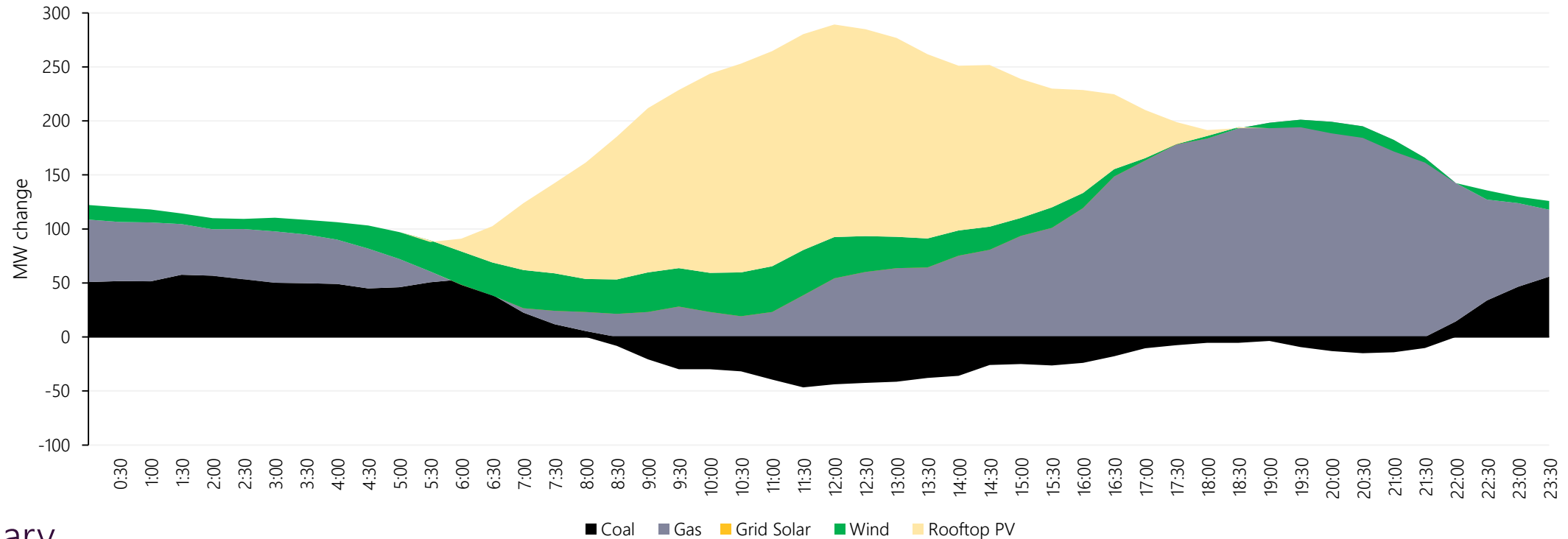


## Summary

- A** Generally high evening and overnight temperatures resulted in comparatively high off-peak demand:
- Average operational demand was 80 MW (3.9%) higher than Q1 2019 due to high evening and overnight temperatures.
- B** The WEM recorded its third highest daily peak demand on record of 3,916 MW at 1730 hrs on 4 February 2020:
- This was primarily driven by very hot conditions in Perth on the day (42.7°C), after a two-day period of hot conditions (over 34°C).

# Rooftop PV impacts the daytime supply profile; GPG meets overnight demand increase

Change in supply by time of day by fuel type – Q1 2020 versus Q1 2019

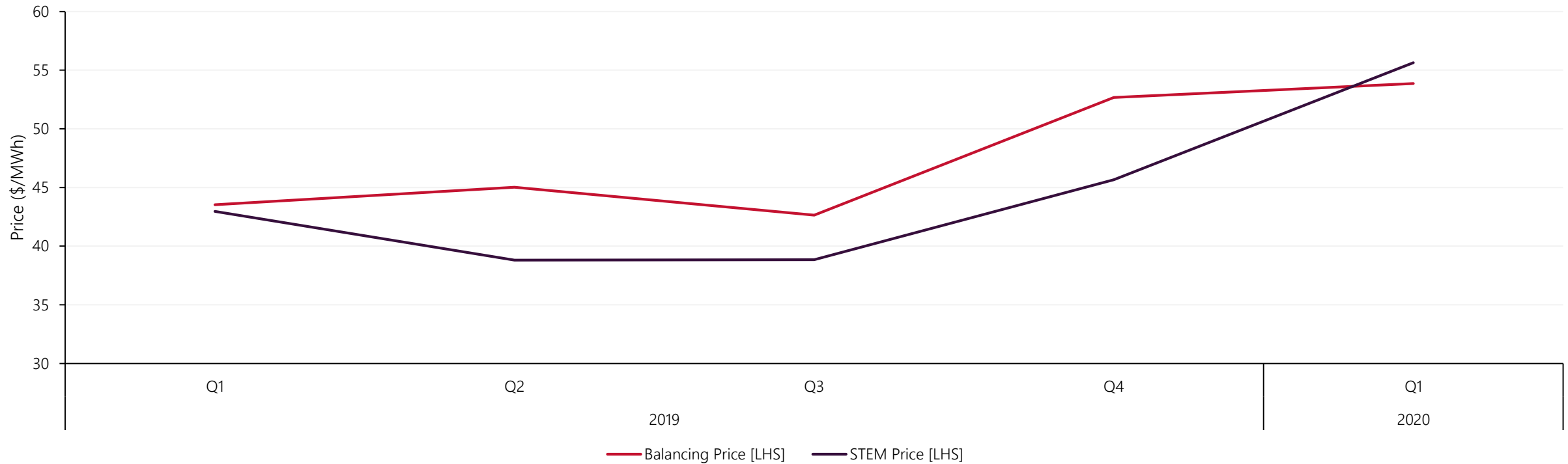


## Summary

- A The higher average operational demand (+200MW) during the evening peak period was almost entirely met by GPG.
- B Rooftop PV increased by 63 MW on average, with a maximum quarterly output of 974 MW:
  - This resulted in an all-time minimum demand record for the WEM of 1,135 MW at 1100 hrs on Saturday, 4 January 2020.
- C Wind generation increased by 17 MW (7%) on average, predominantly due to increased production from existing facilities.

# Higher demand and greater outages leads to higher Balancing Price

Balancing Price, STEM Price by quarter



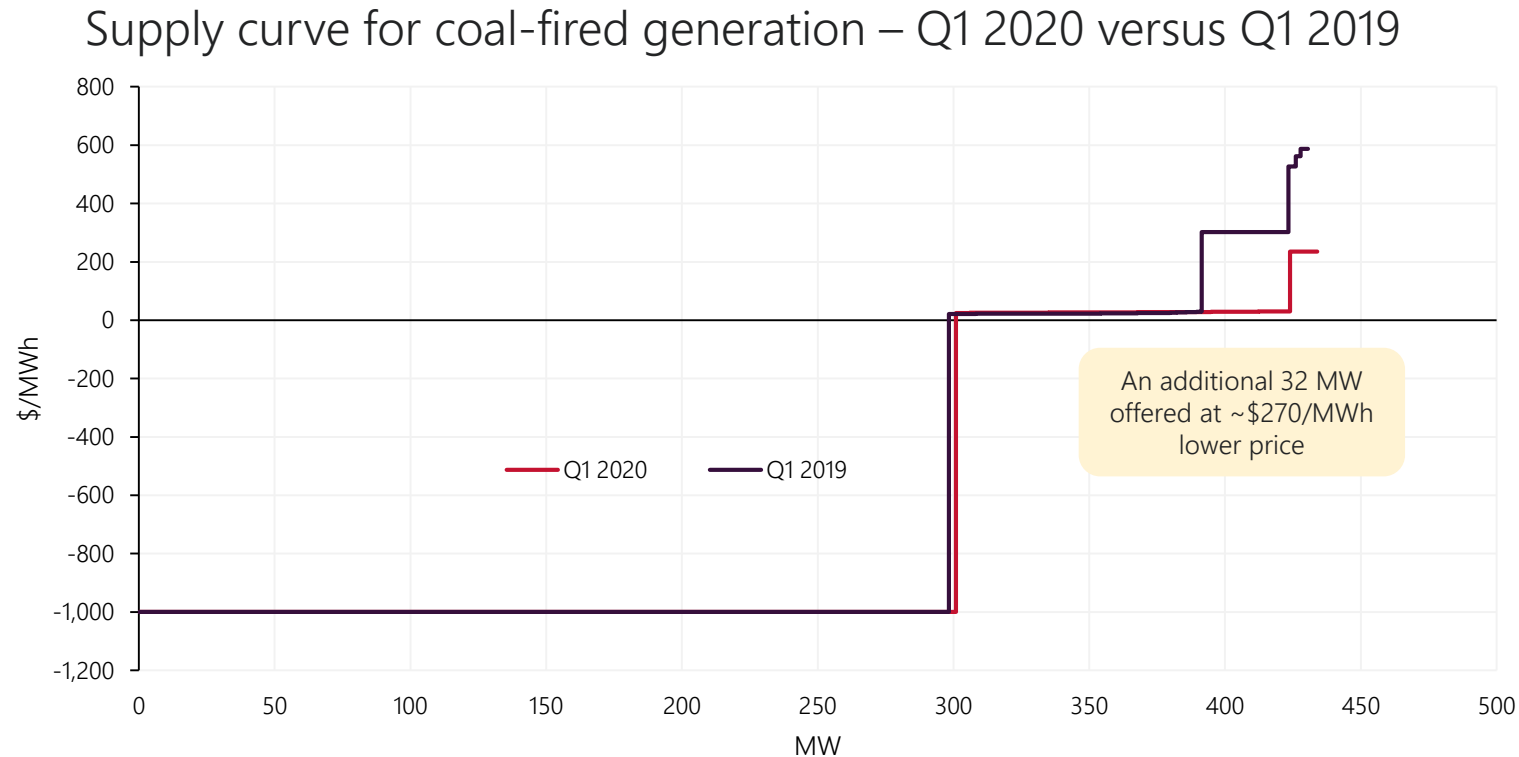
## Summary

The average Balancing Price in Q1 2020 increased by 23.7% compared to Q1 2019:

- A This was primarily due to a 3.9% increase in average operational demand and a decrease in availability of comparatively low cost black coal-fired generation

- B Average prices in the Short-Term Energy Market (STEM) increased by 29.5% from Q1 2019.

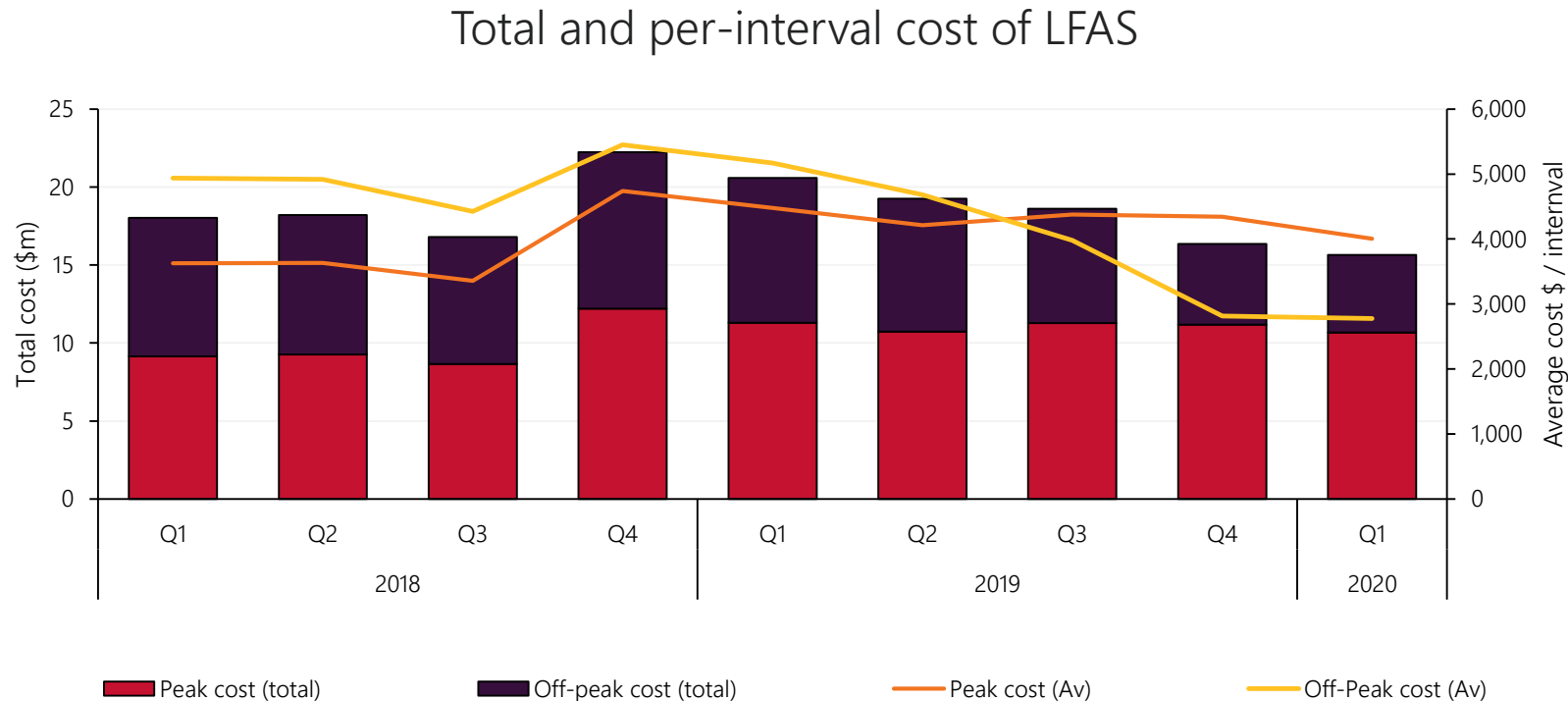
# Spinning Reserve rule change results in more available capacity at lower costs



## Summary

- A On 1 September 2019 a new methodology for allocating Spinning Reserve Ancillary Service costs came into effect in the WEM. This rule change has resulted in additional generation capacity becoming available at lower prices.
- B On average an additional 32 MW of generation capacity from Coal Facilities was offered at around \$30/MWh instead of at the Maximum STEM Price (\$302 at the time).

# LFAS Prices and cost have declined since the introduction of a Sculpted LFAS requirement



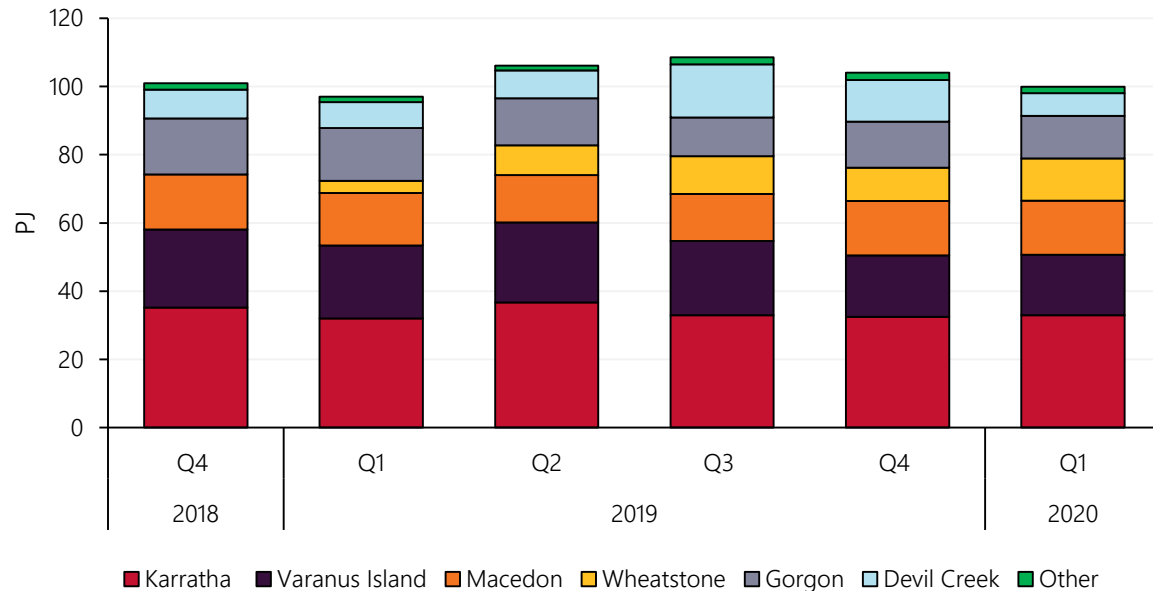
## Summary

- A AEMO introduced a 'sculpted' approach to procurement of Load Following Ancillary Services (LFAS) in the 2019-20 Financial Year to reflect greater variability of rooftop PV during daylight hours:
  - 85 MW LFAS Up and Down between 0530 hrs and 1930 hrs (Peak) and 50 MW between 1930 hrs and 0530 hrs (Off-peak), as opposed to a flat 72 MW requirement.
- B The average price of LFAS Up and LFAS Down has decreased by 19% and 17%, respectively.
- C The total cost of LFAS in Q1 2020 was reduced by \$5.0 million compared to Q1 2019.

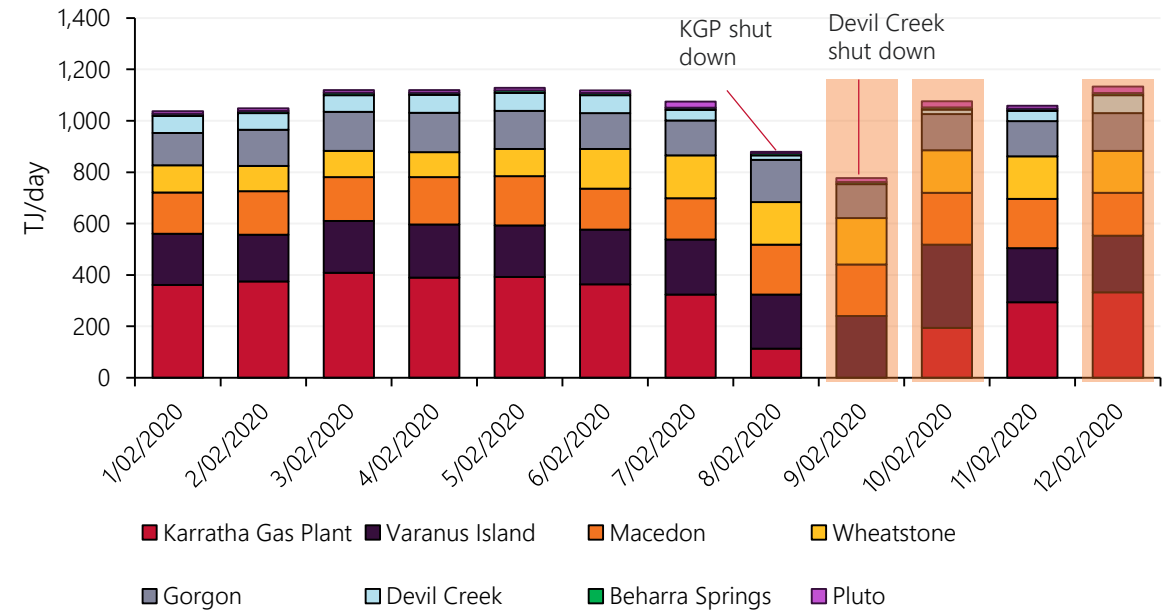
# Gas

## Q1 2020 versus Q4 2019

Western Australia gas production down 4%



Cyclone Damien causes shutdown of Gas Production Facilities



## Summary

- A Gas Production reduced by 4%, this was primarily due to reduced production from Devil Creek (-5.6 PJ)
- B Gas production was also impacted by Severe Tropical Cyclone Damien which made landfall on 8 February 2020:
  - Karratha Gas Plant (KGP) and Devil Creek briefly shut down production, leading to three amber LCA alerts on the DBNGP.
- C Q1 2020 saw a significant increase in the number of Amber and Red LCA alerts:
  - Over the five years prior to Q1 2020 there have been a total of 19 Amber LCA alerts and 1 Red LCA alerts. In Q1 2020 alone there were 35 Amber LCA alerts and 2 Red LCA alerts

# Questions and Feedback

Market Operations

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