

Market Monitoring Unit

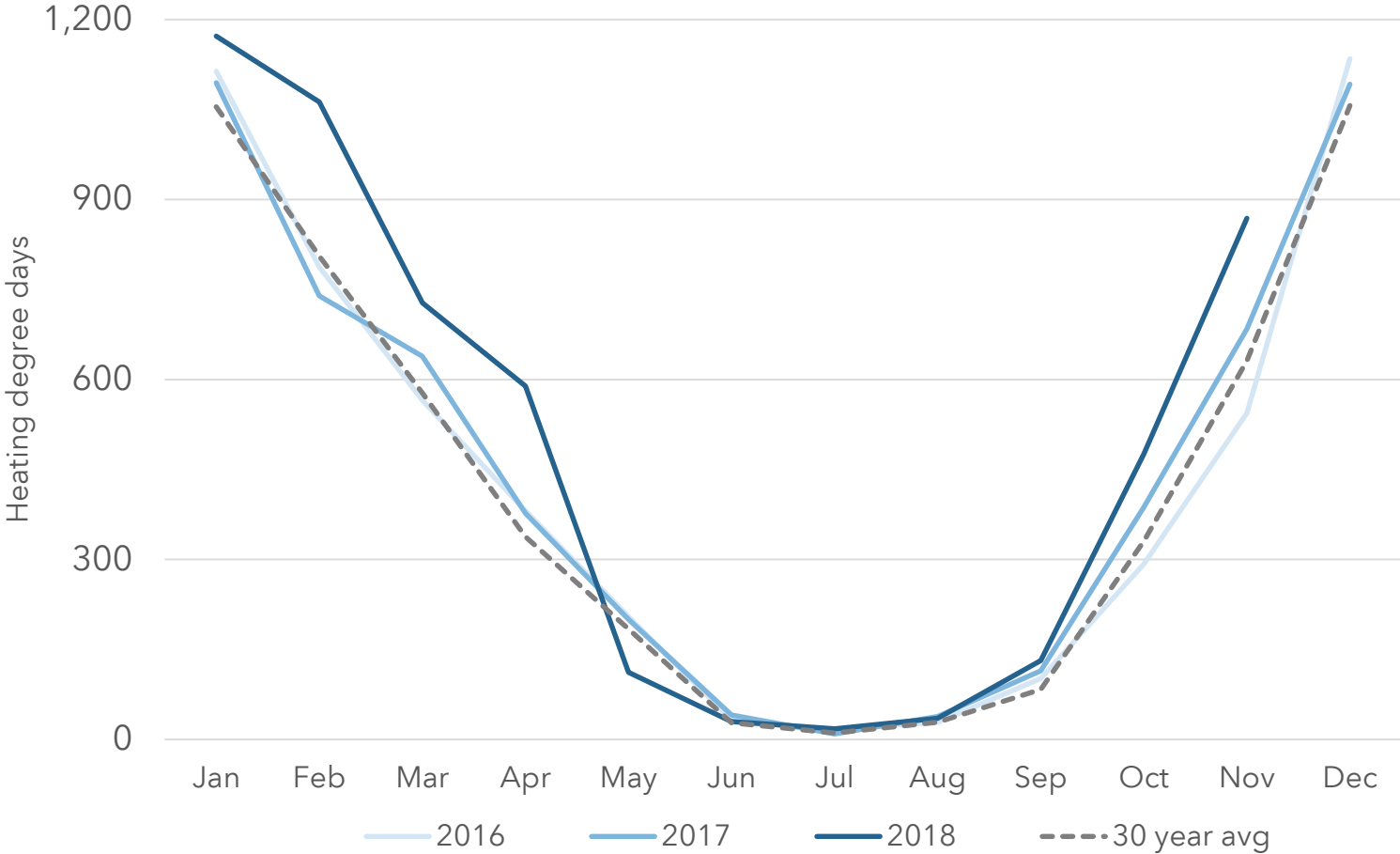
Fall 2018

Quarterly Report

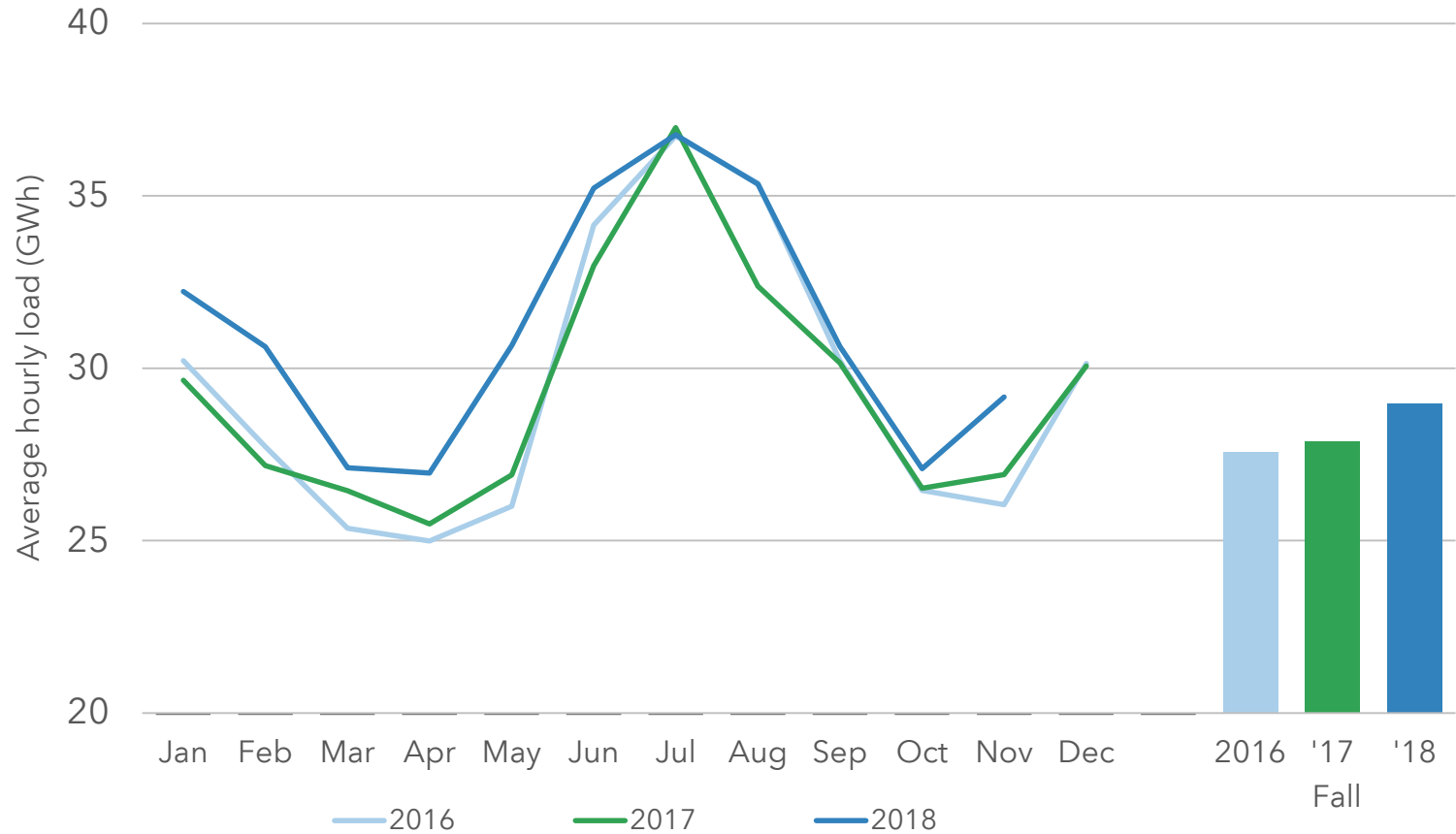
Fall 2018 highlights

- Energy prices and gas costs both increased
- Load increased
- Overall congestion in the footprint has continued to decline
- October and November price spike increase

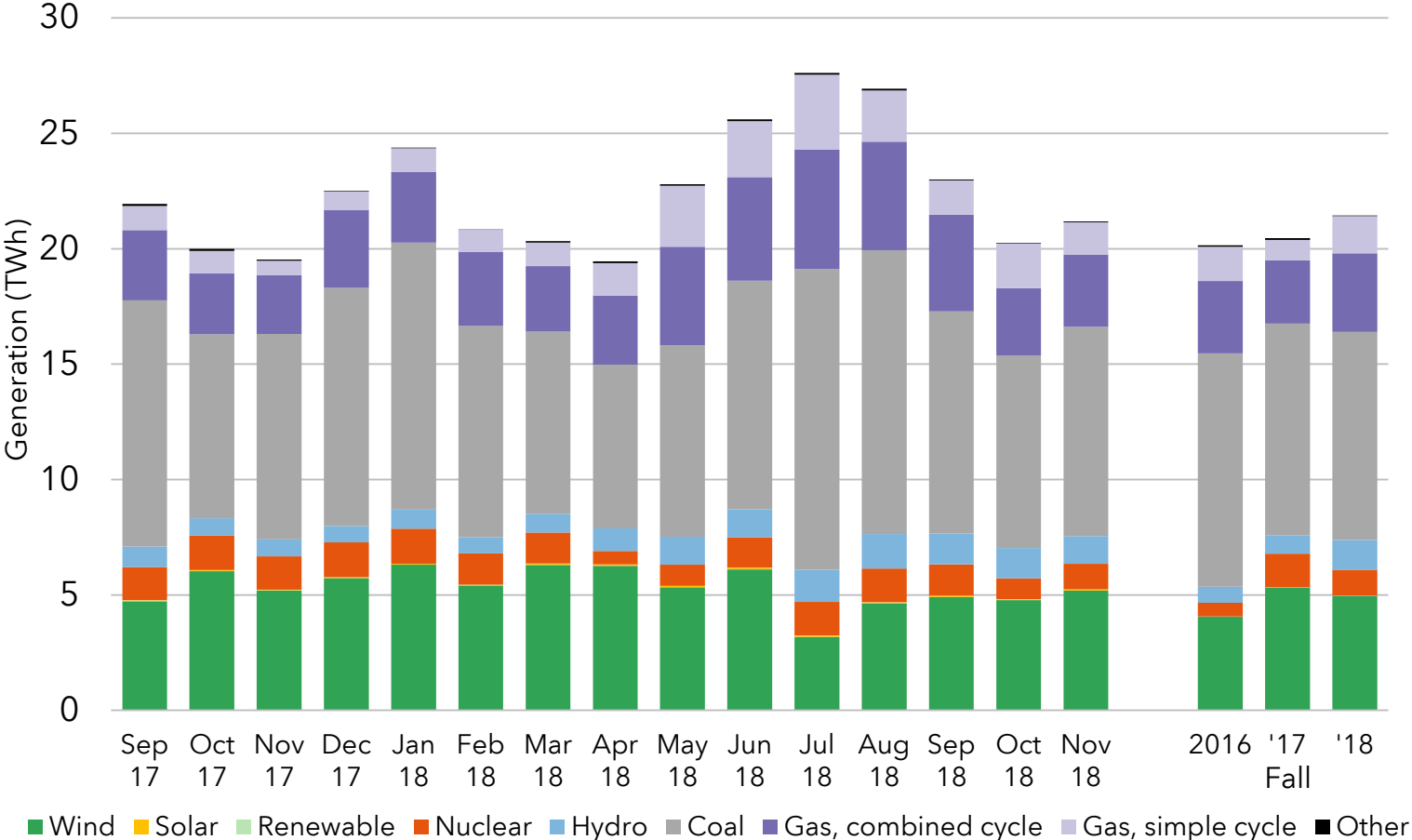
Lower than average temperatures



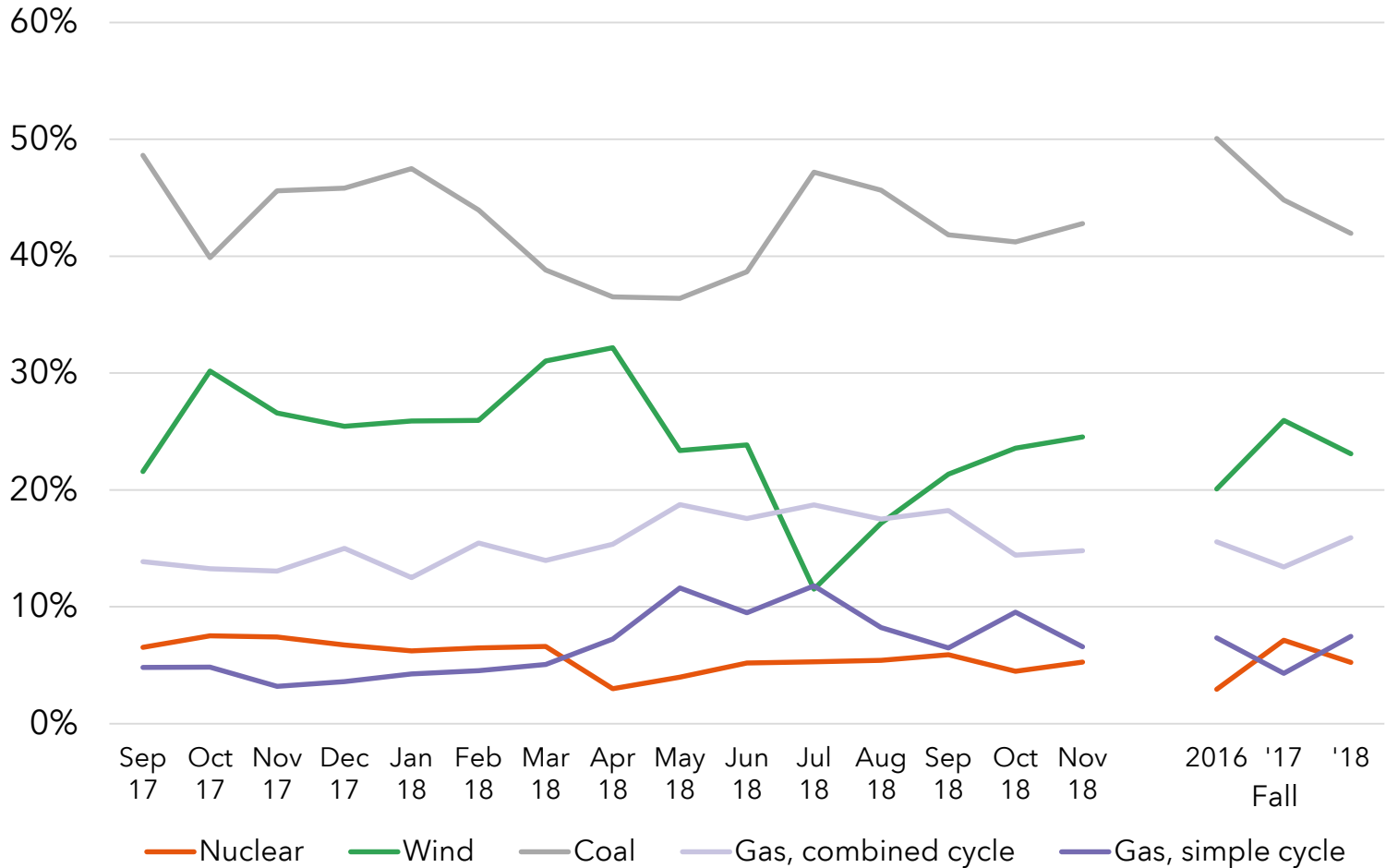
Overall load increased



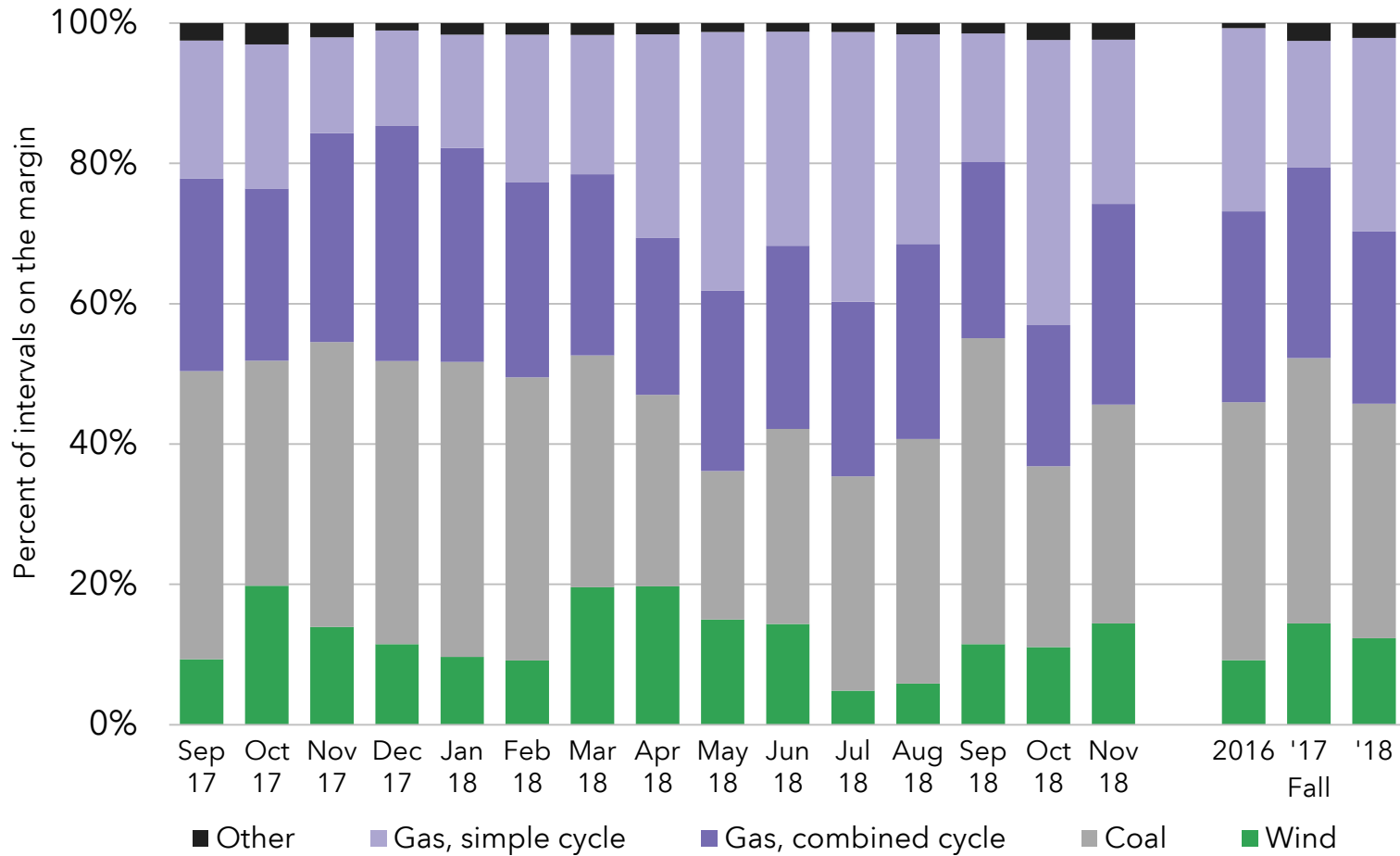
Generation increased as well



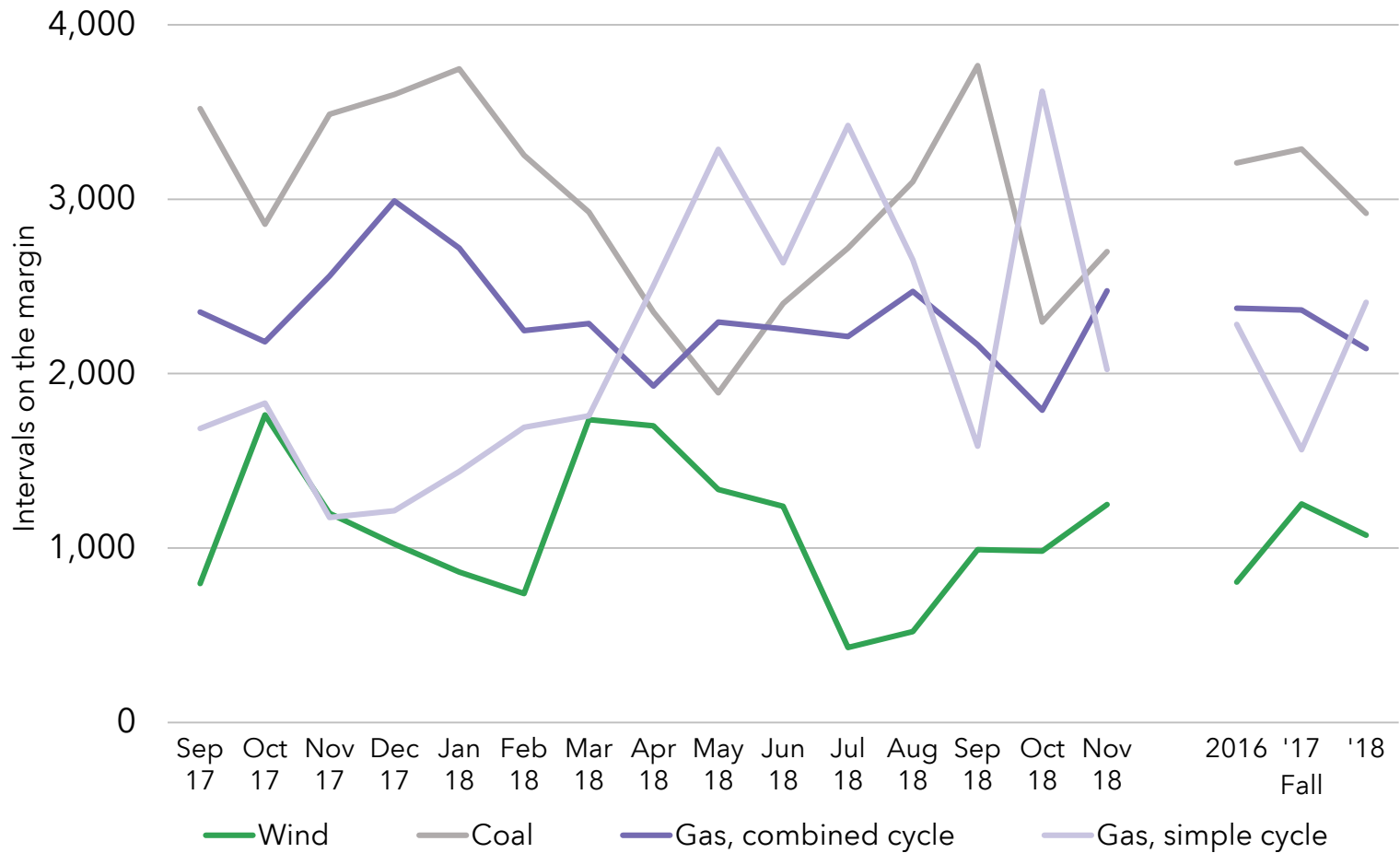
Coal generation declining



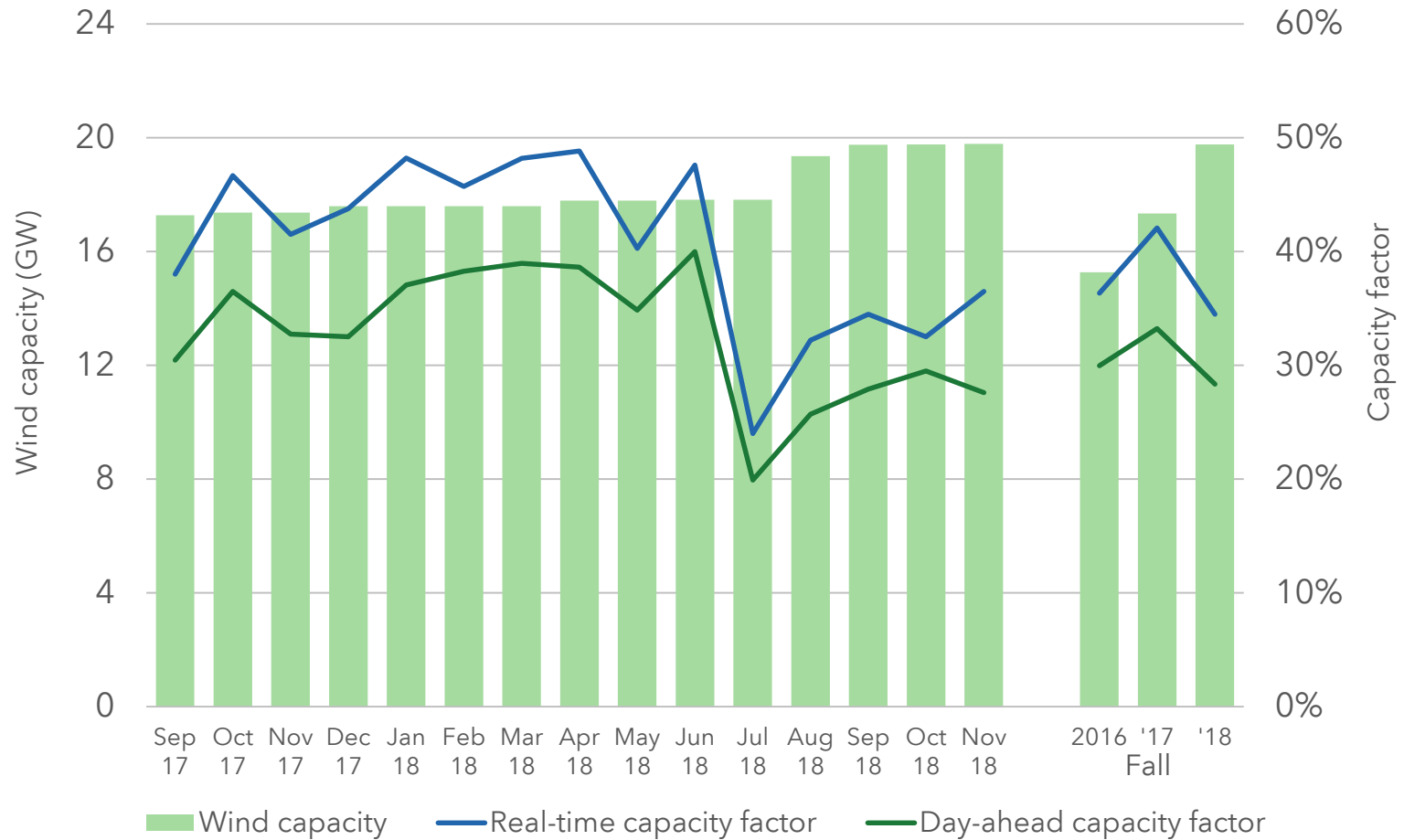
Wind setting prices more frequently in real-time



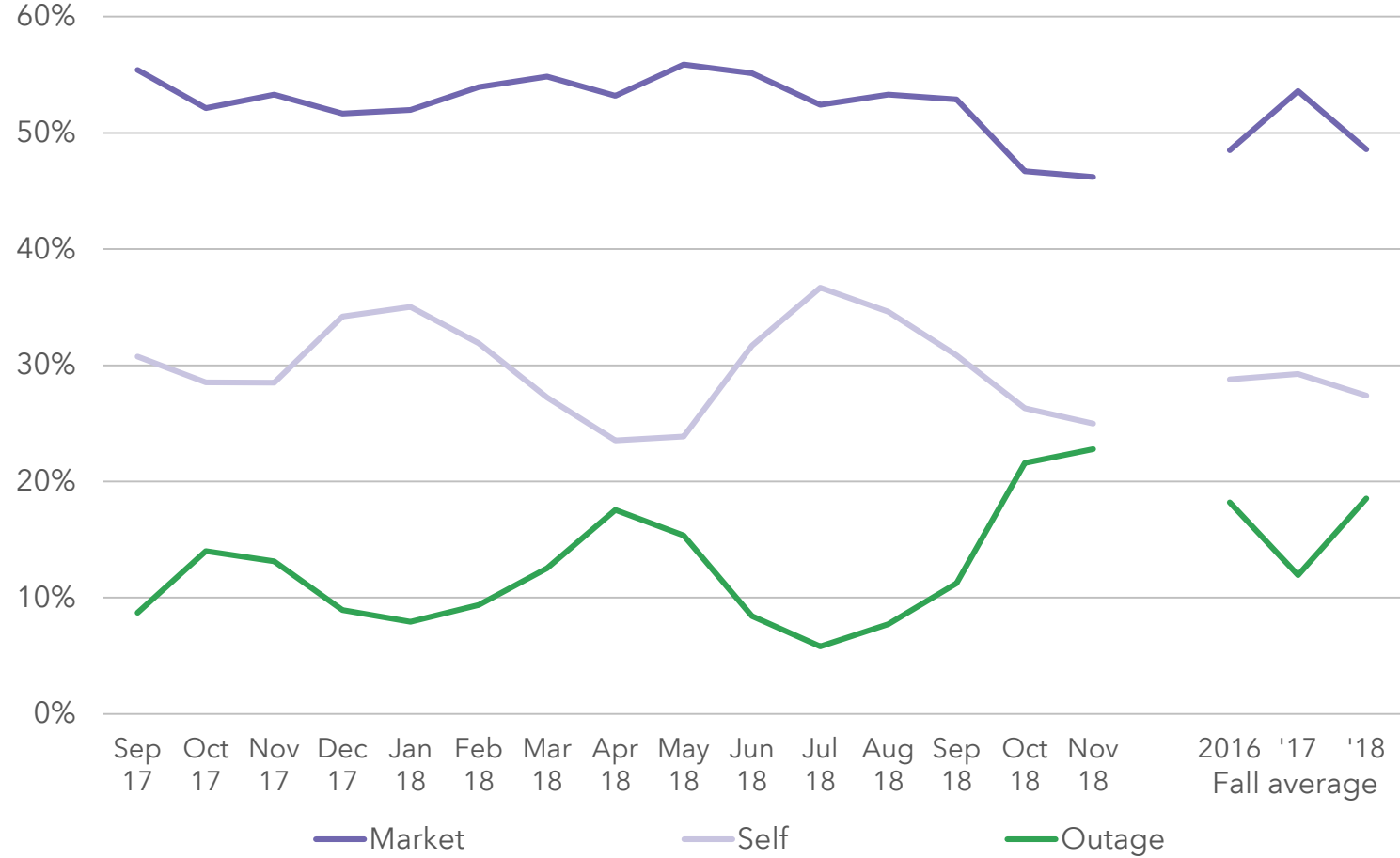
Gas, simple cycle setting prices more frequently in real-time



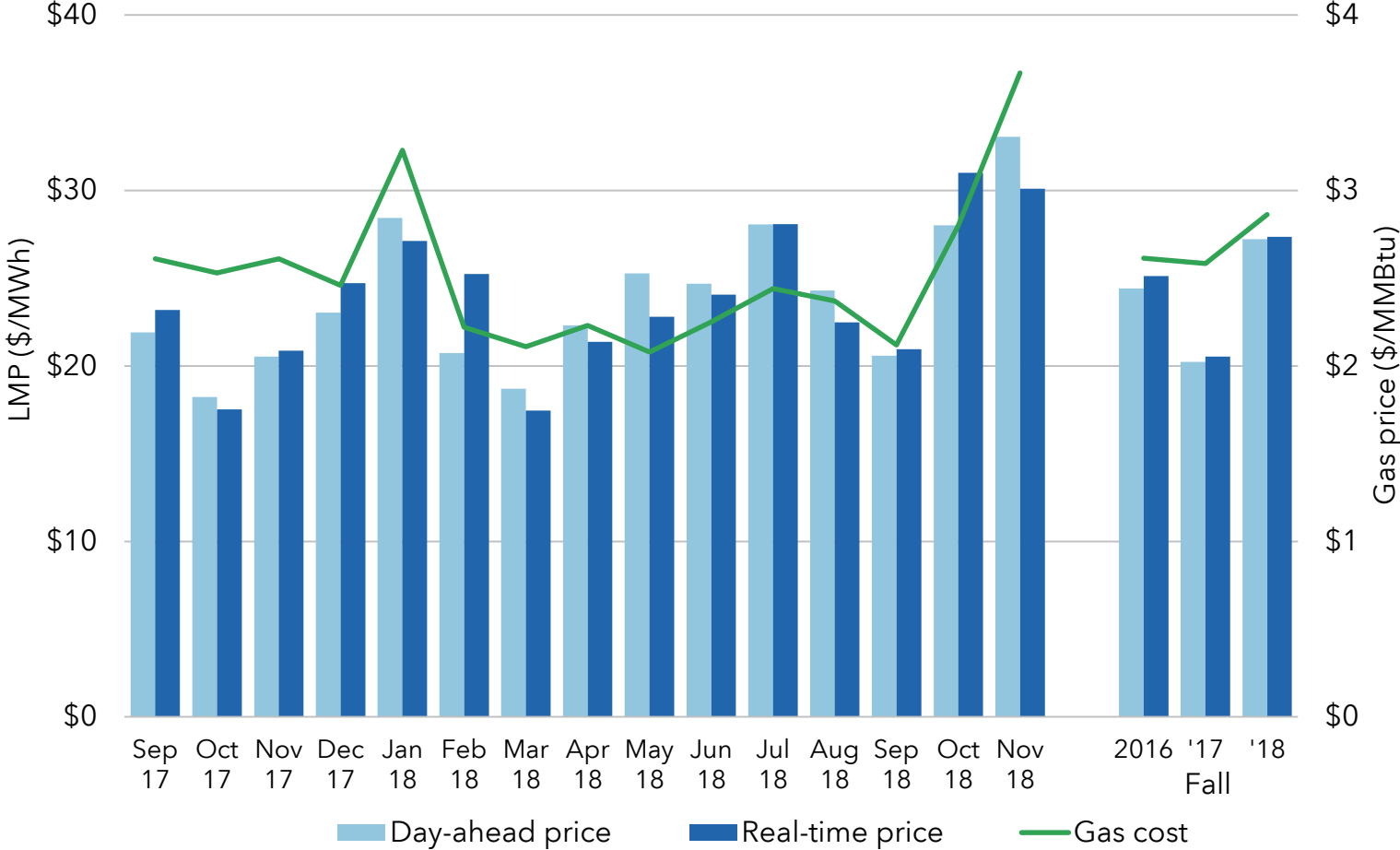
Wind capacity continues to grow



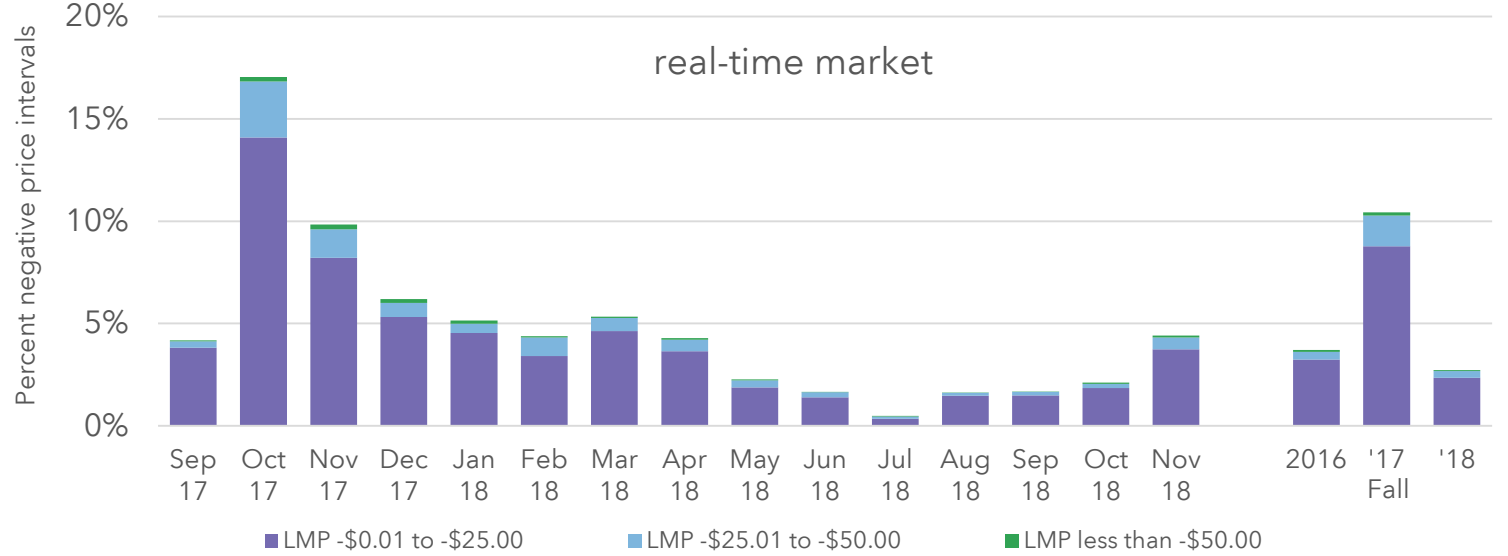
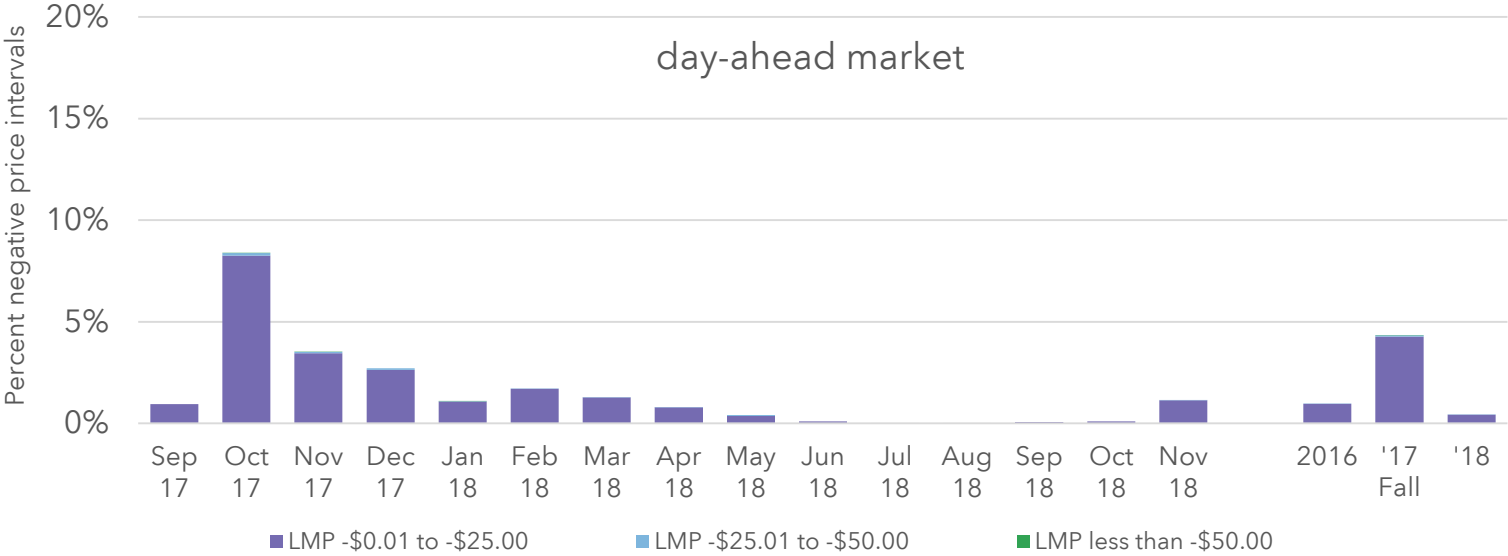
Day-ahead commitment status



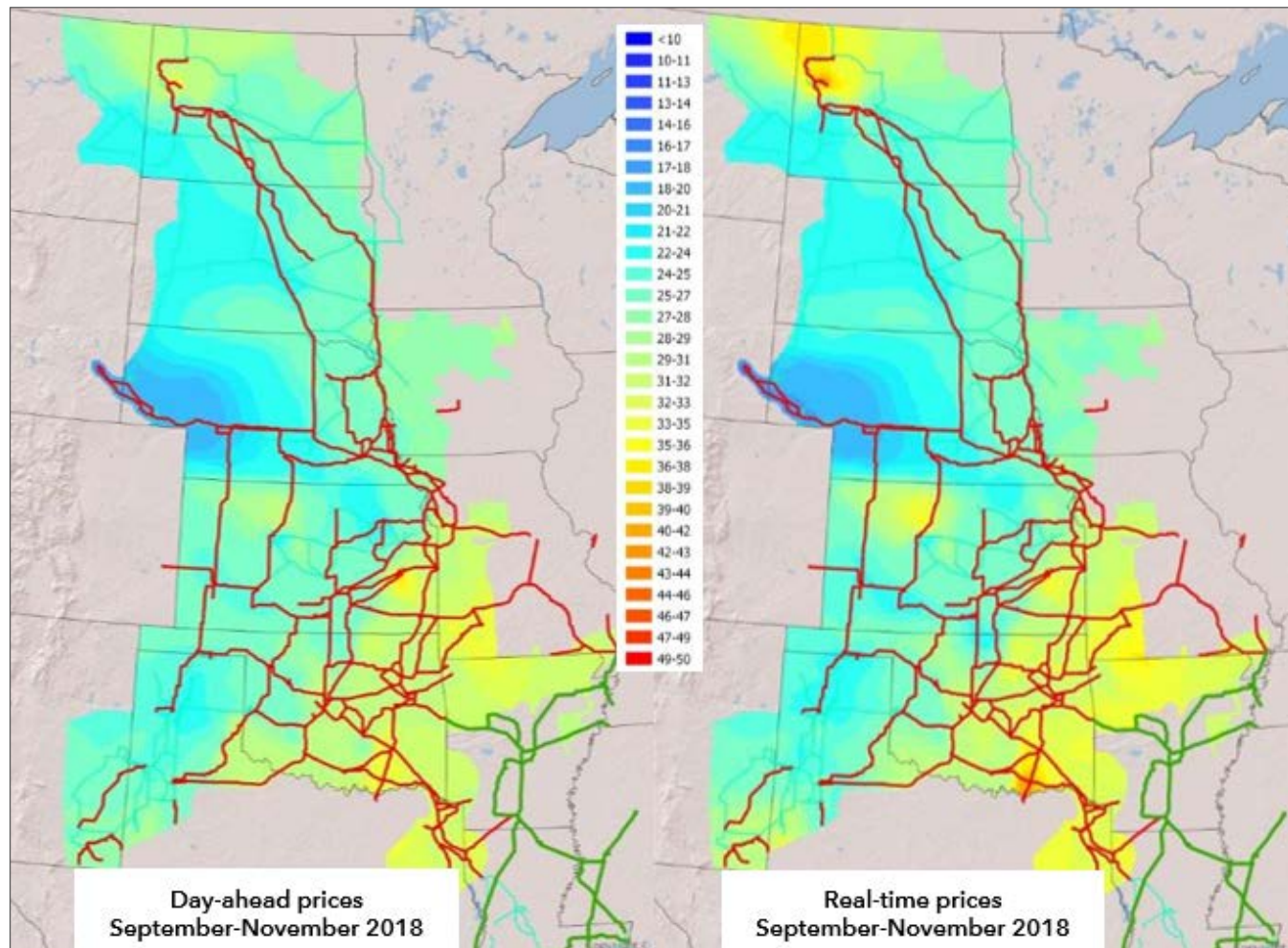
Prices climbed



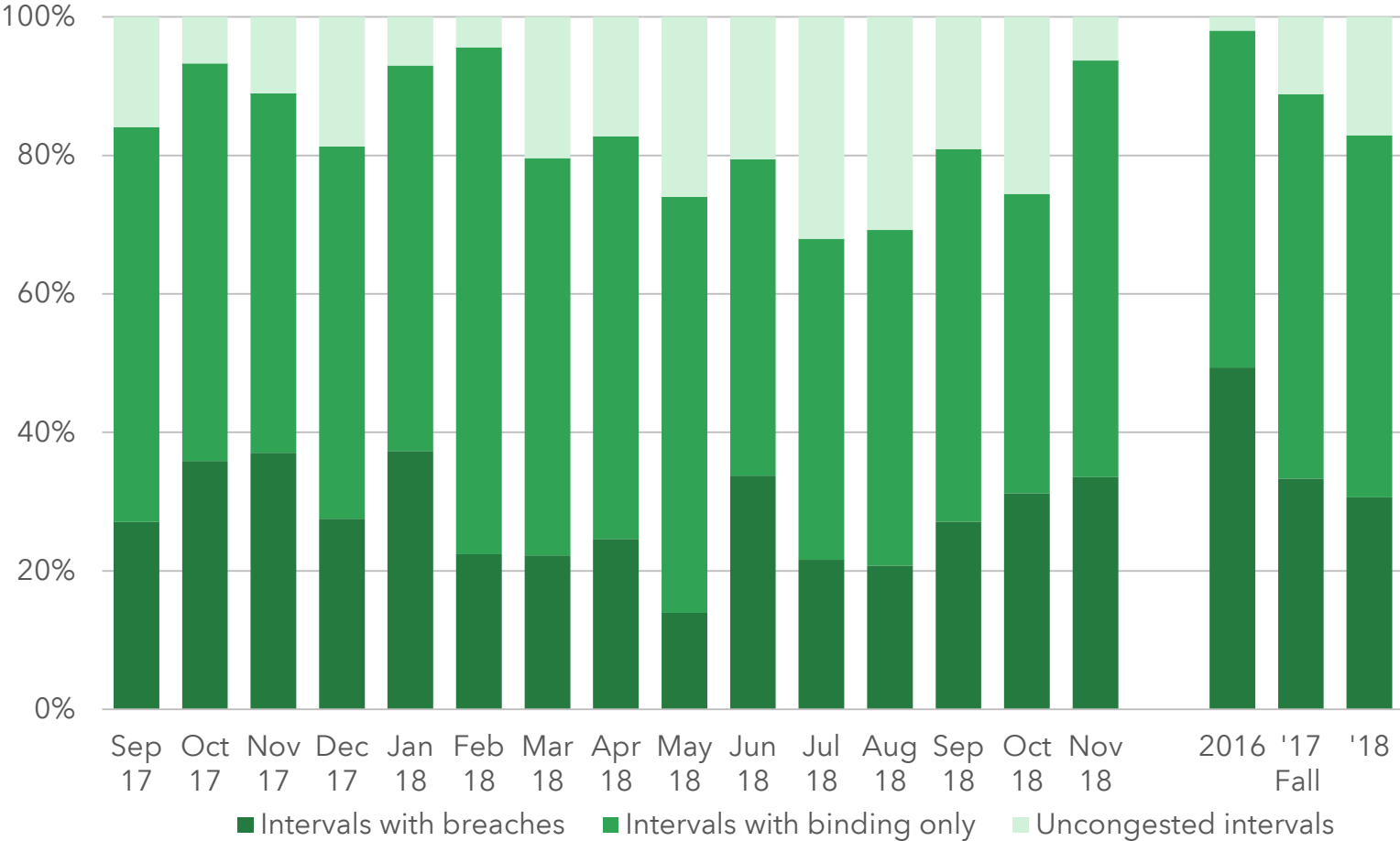
Negative price intervals declined



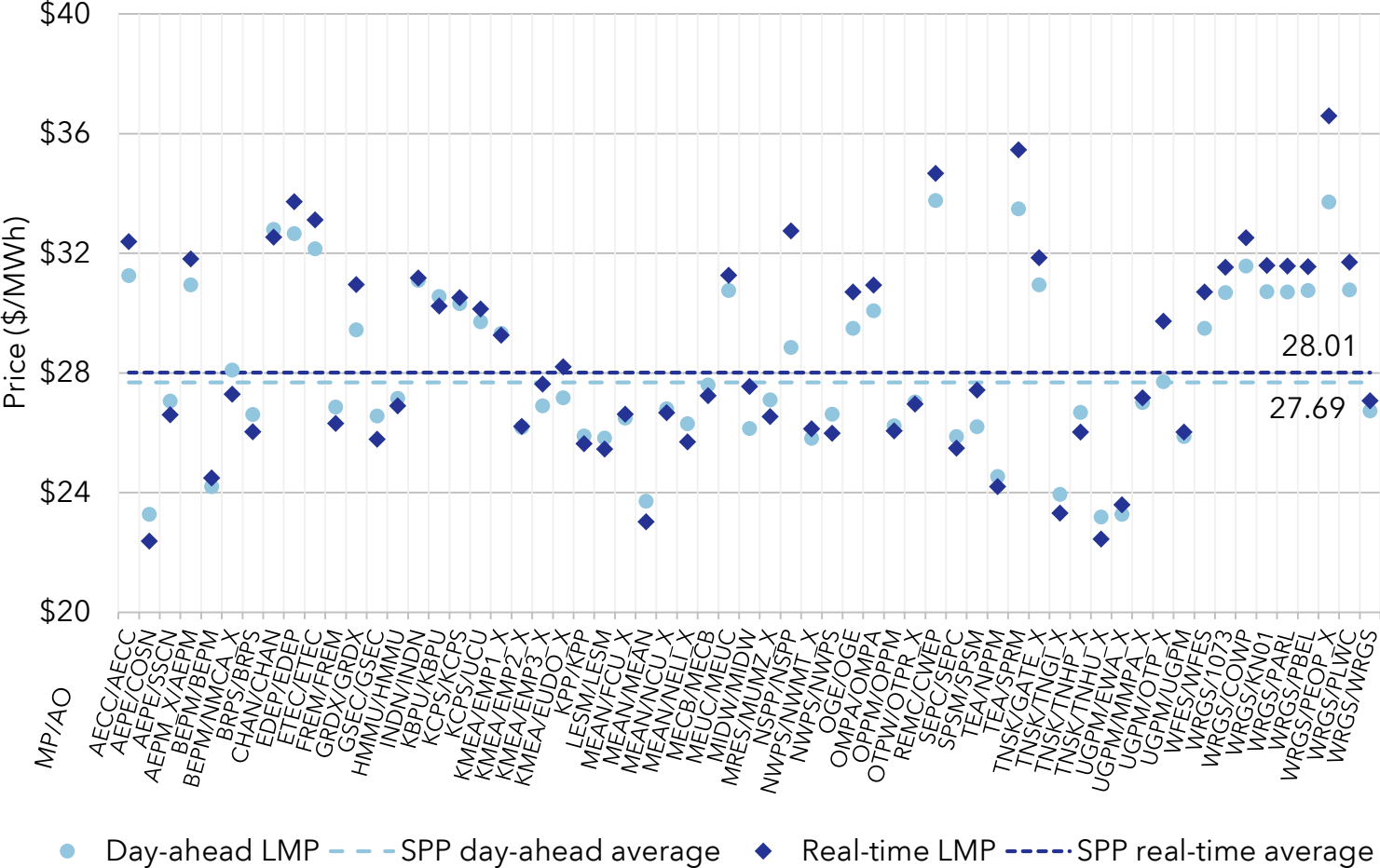
Congestion pattern similar between markets



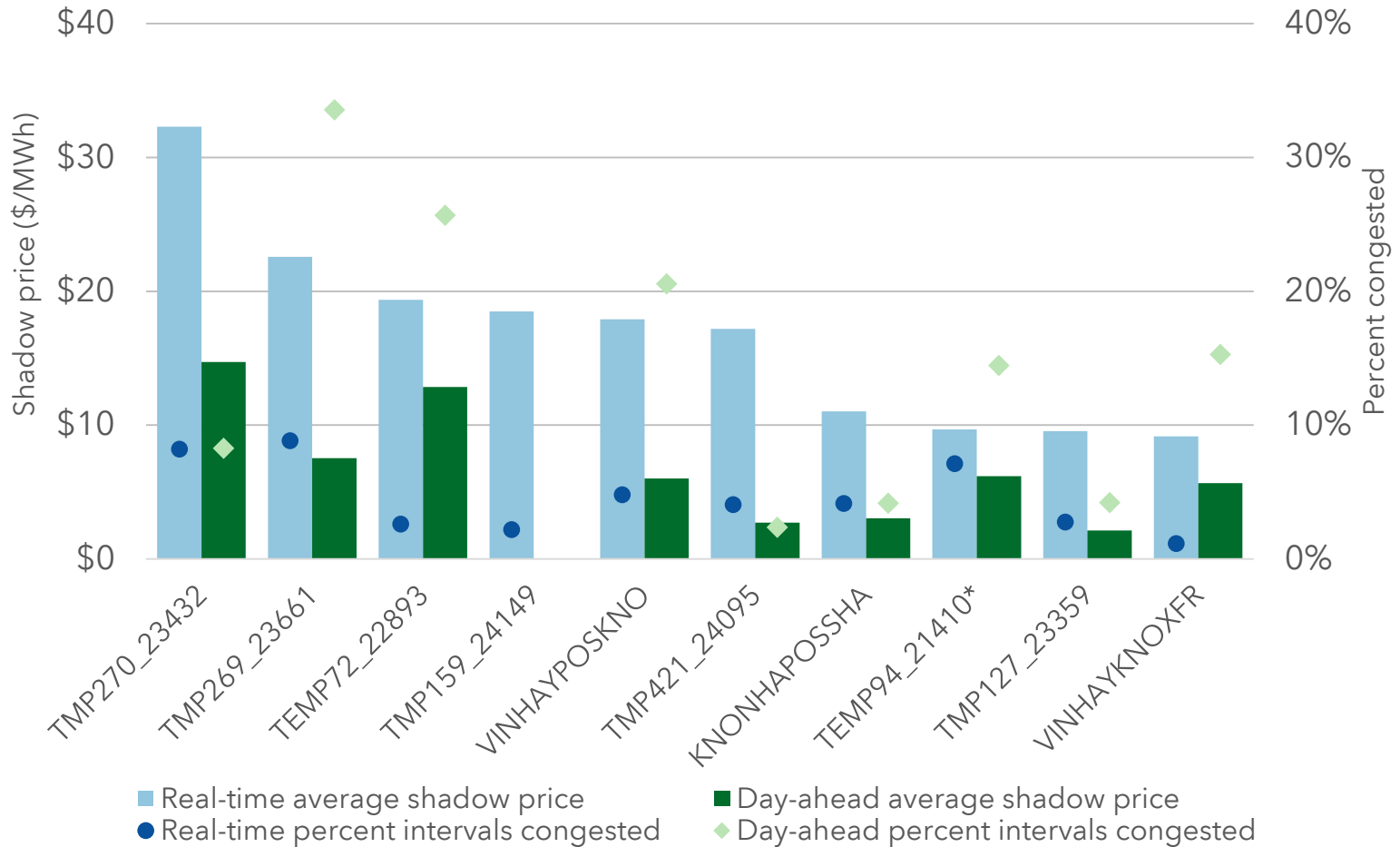
Breached intervals declining



Prices vary across footprint

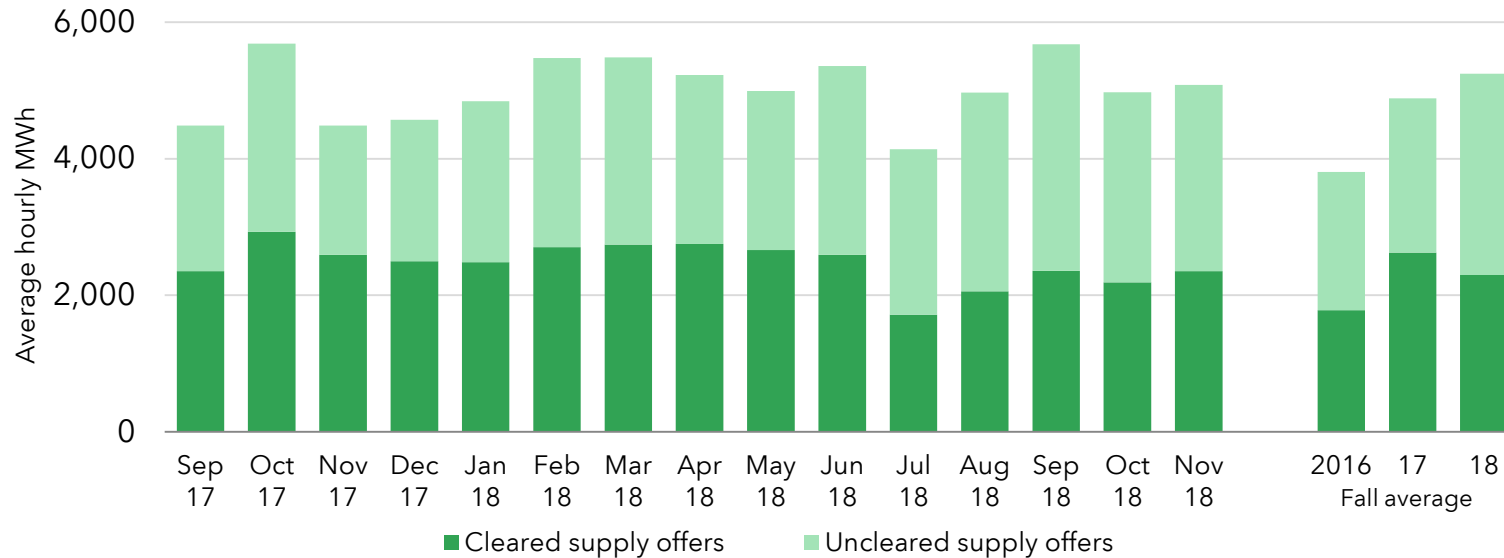
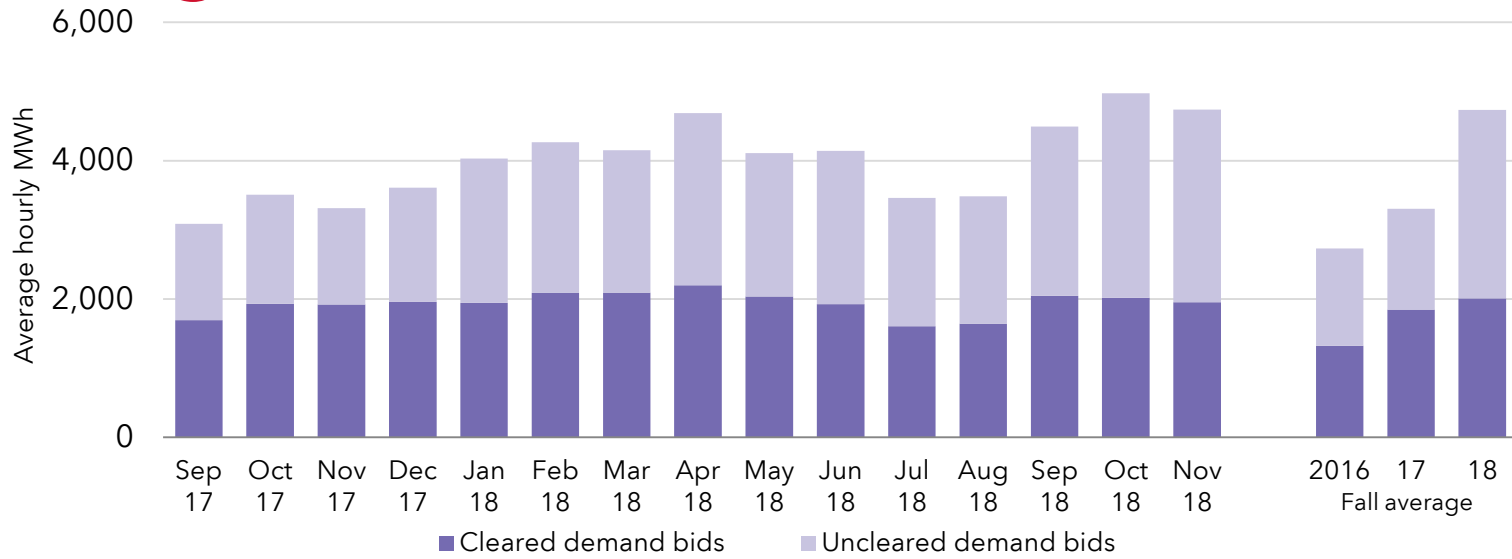


Congestion has shifted

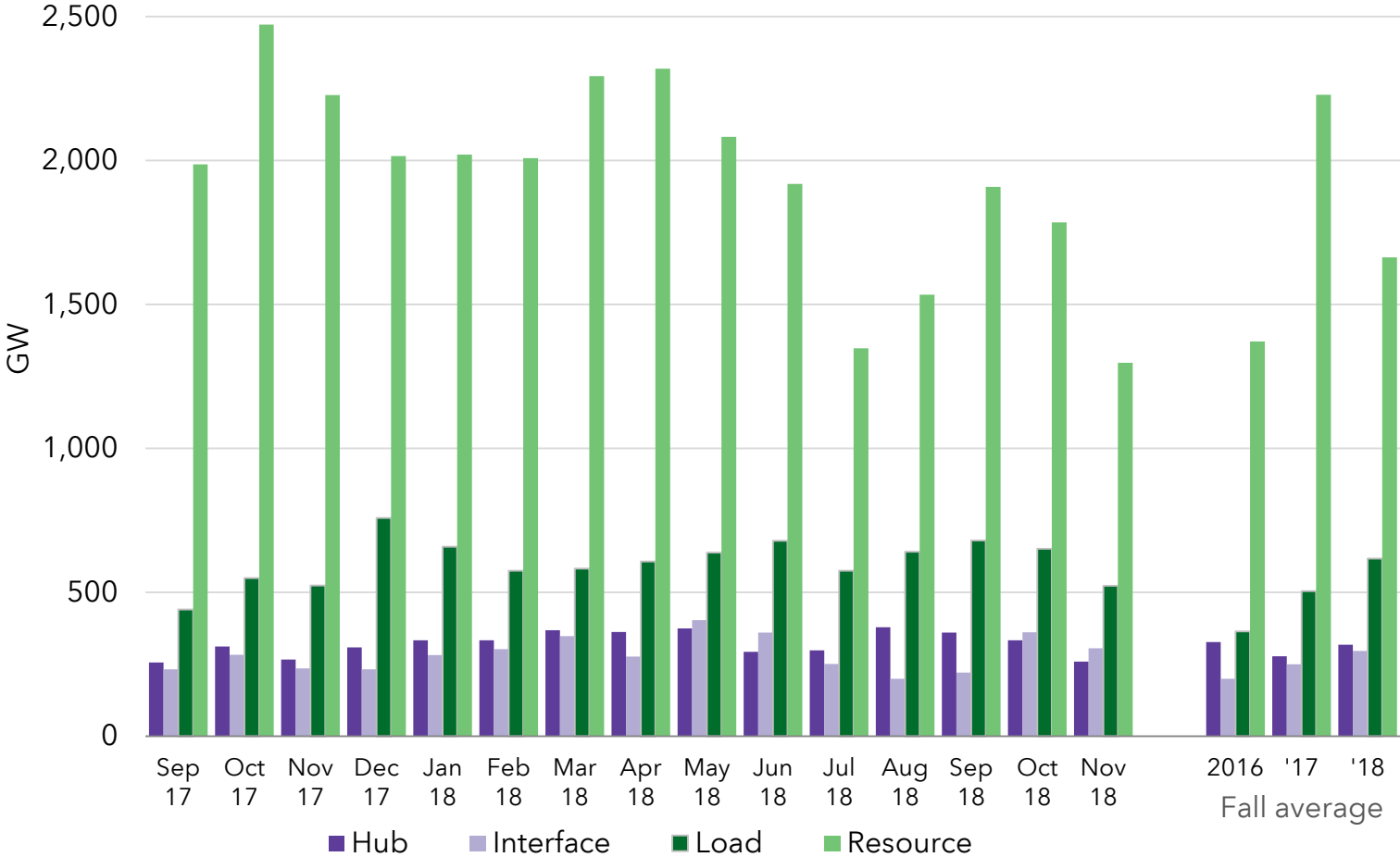


* SPP market-to-market

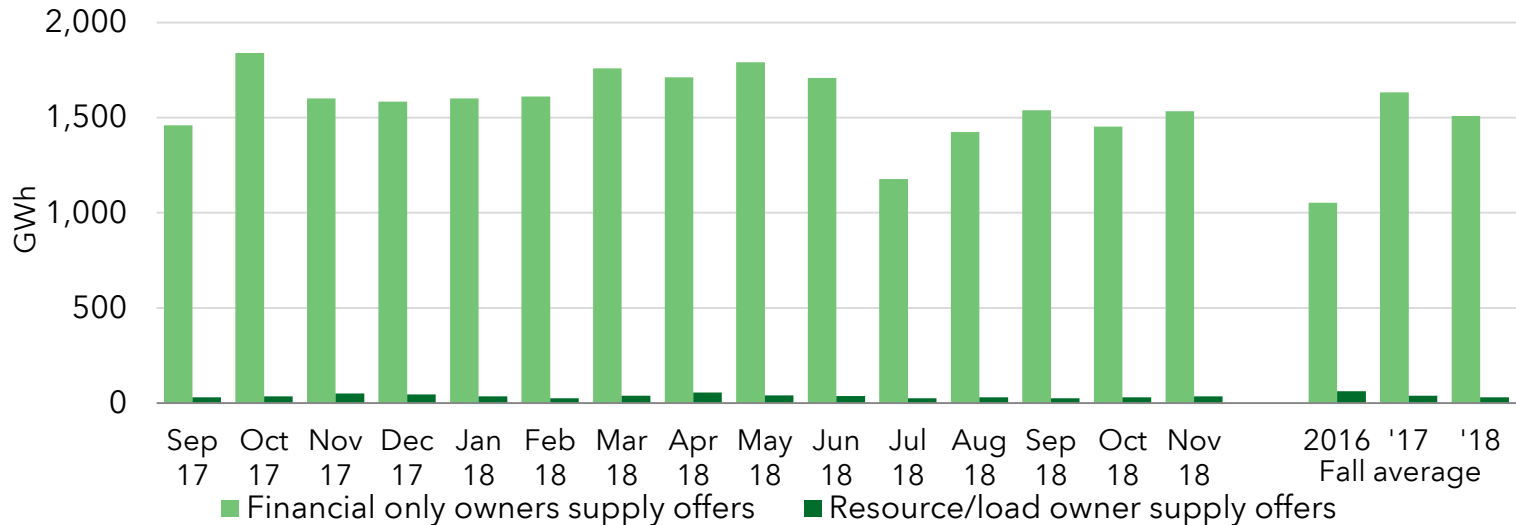
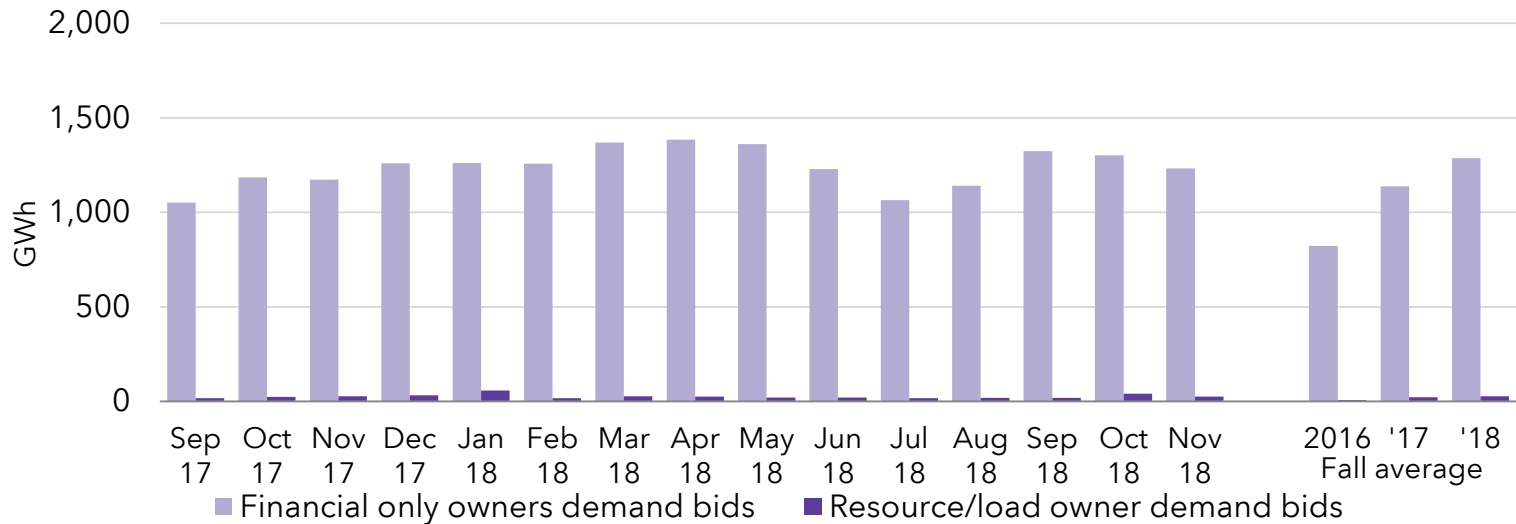
Virtual transactions continue to grow



Most virtual transactions placed at resources

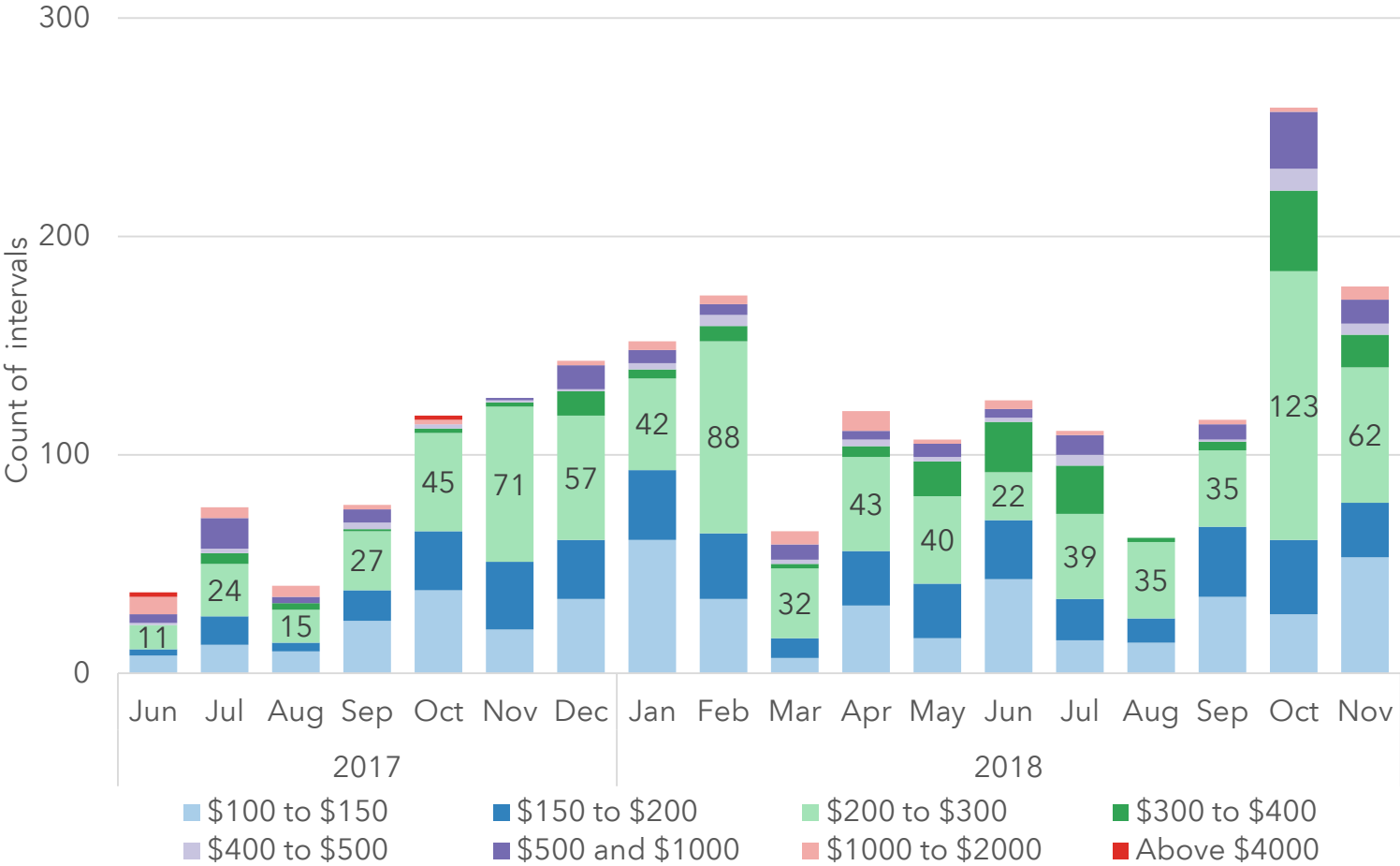


Most virtual transactions done by financial only participants

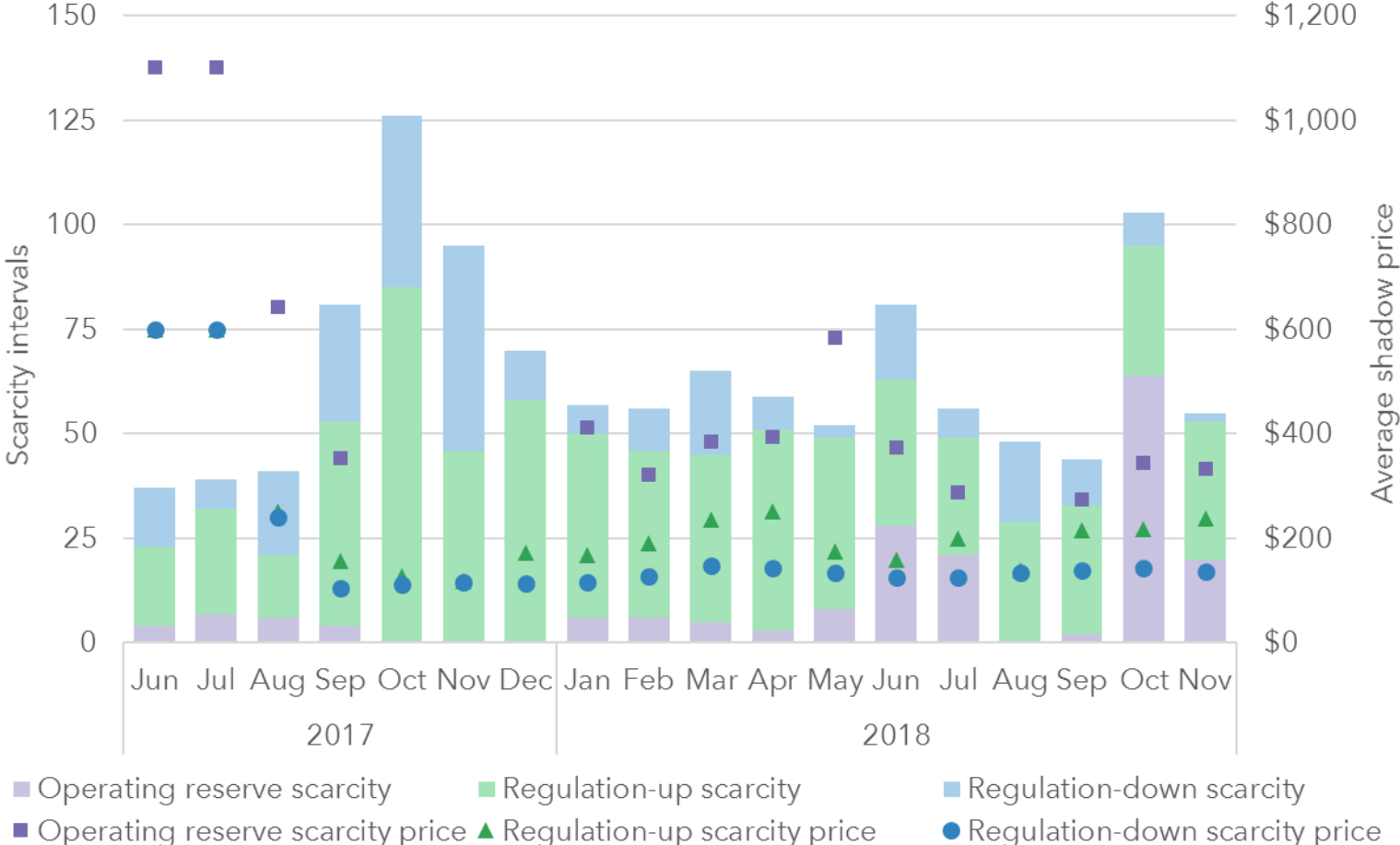


Fall 2018 price spikes & scarcity

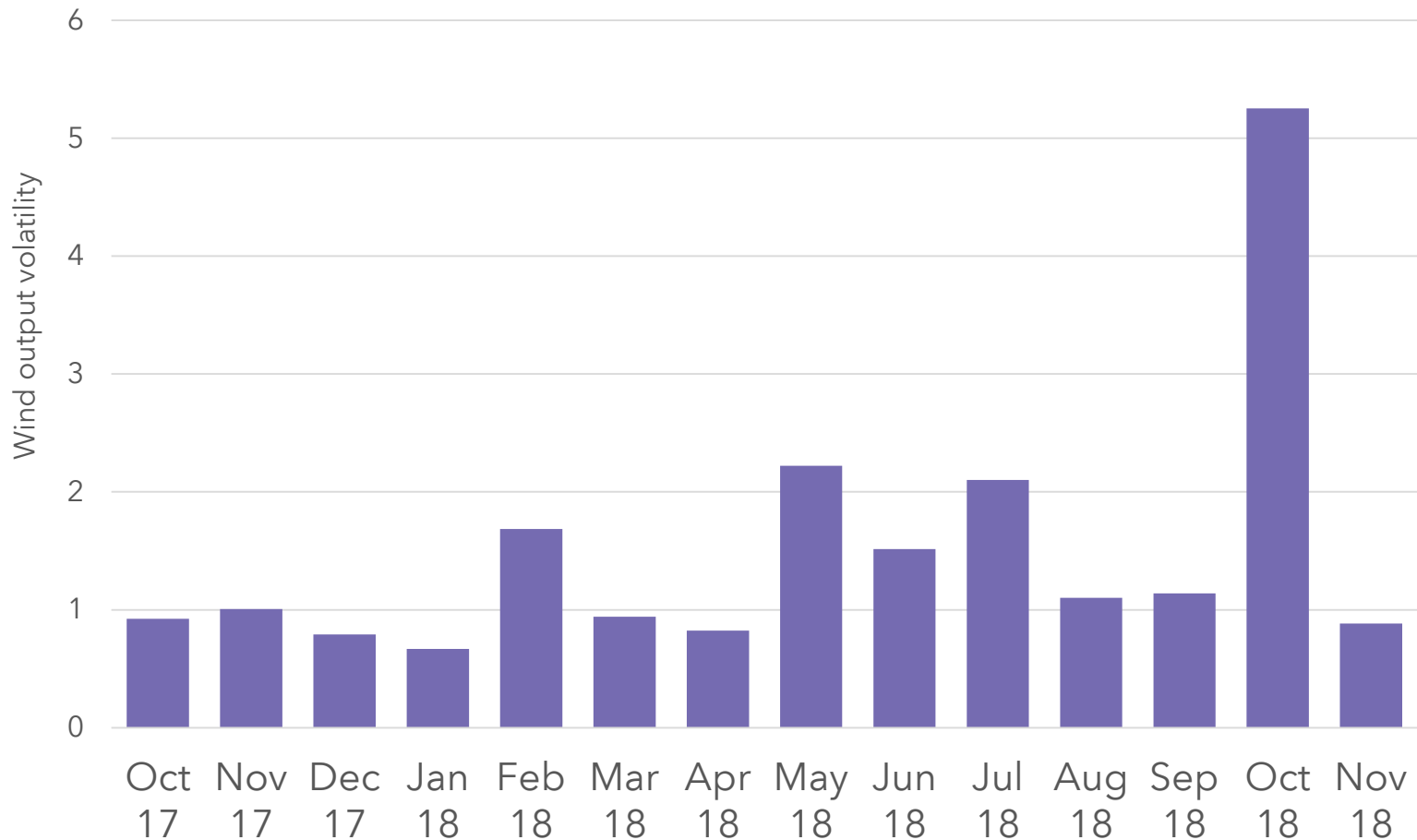
Increase in price spikes



Increase in scarcity events



Wind was more volatile

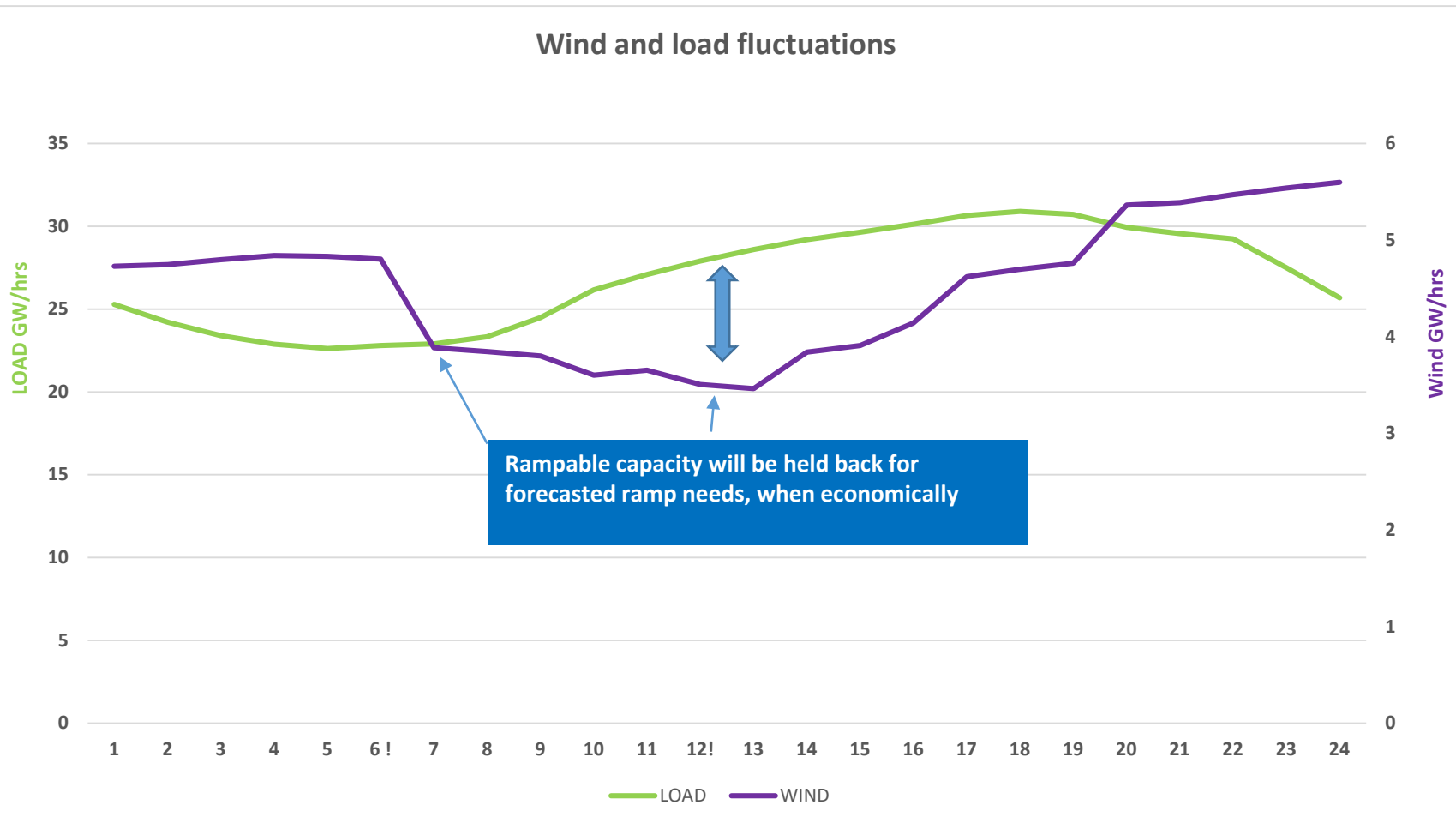


Likely causes of price spikes and scarcity

- Increase in mid-term and long-term wind forecast errors
- Increase in spot natural gas prices
- Unplanned derates and/or outages

Benefits of a ramp product

- Typically the market doesn't run out of capacity
-it runs out of rampable capacity



Questions?