

Market Monitoring Unit

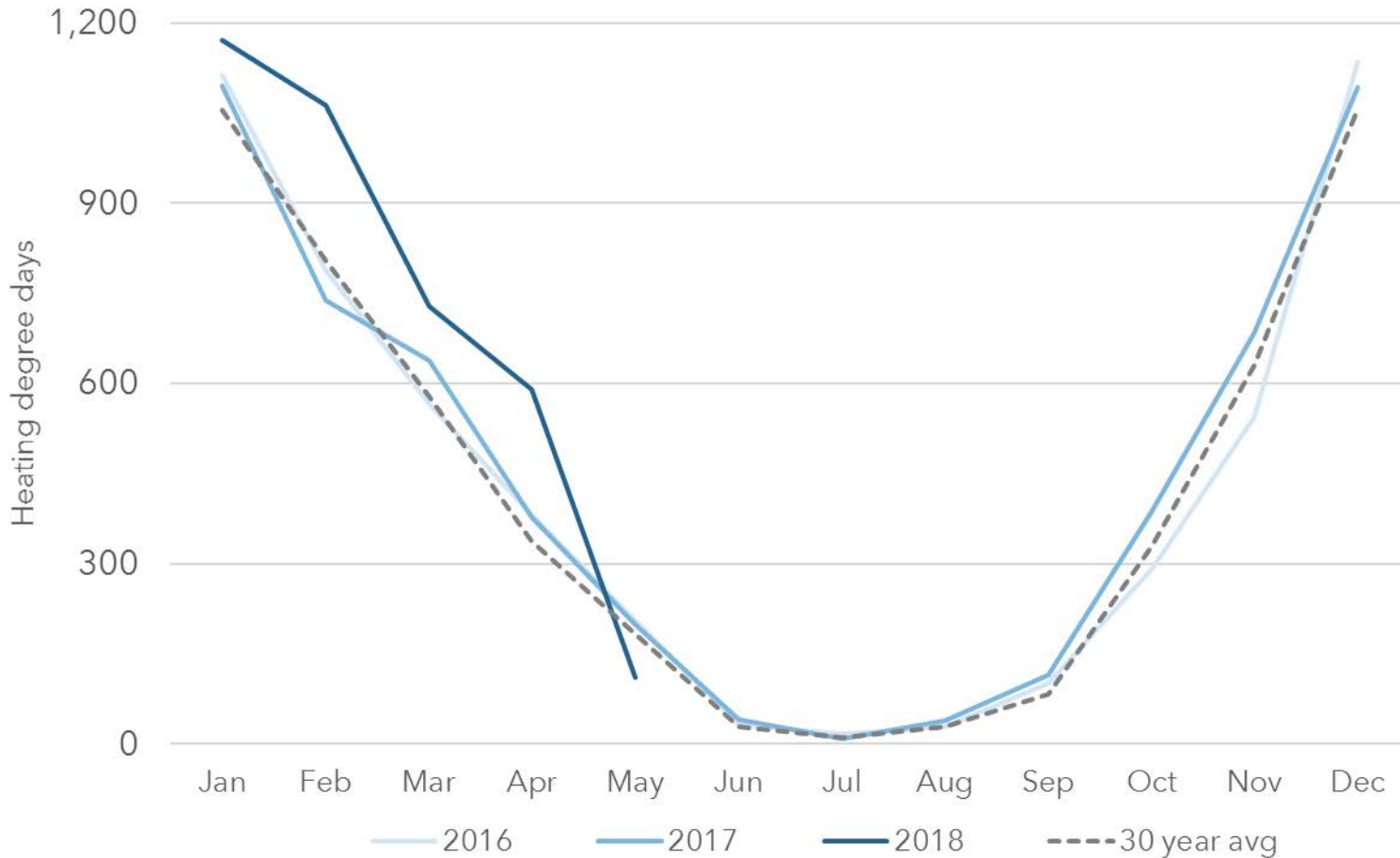
Spring 2018

Quarterly Report

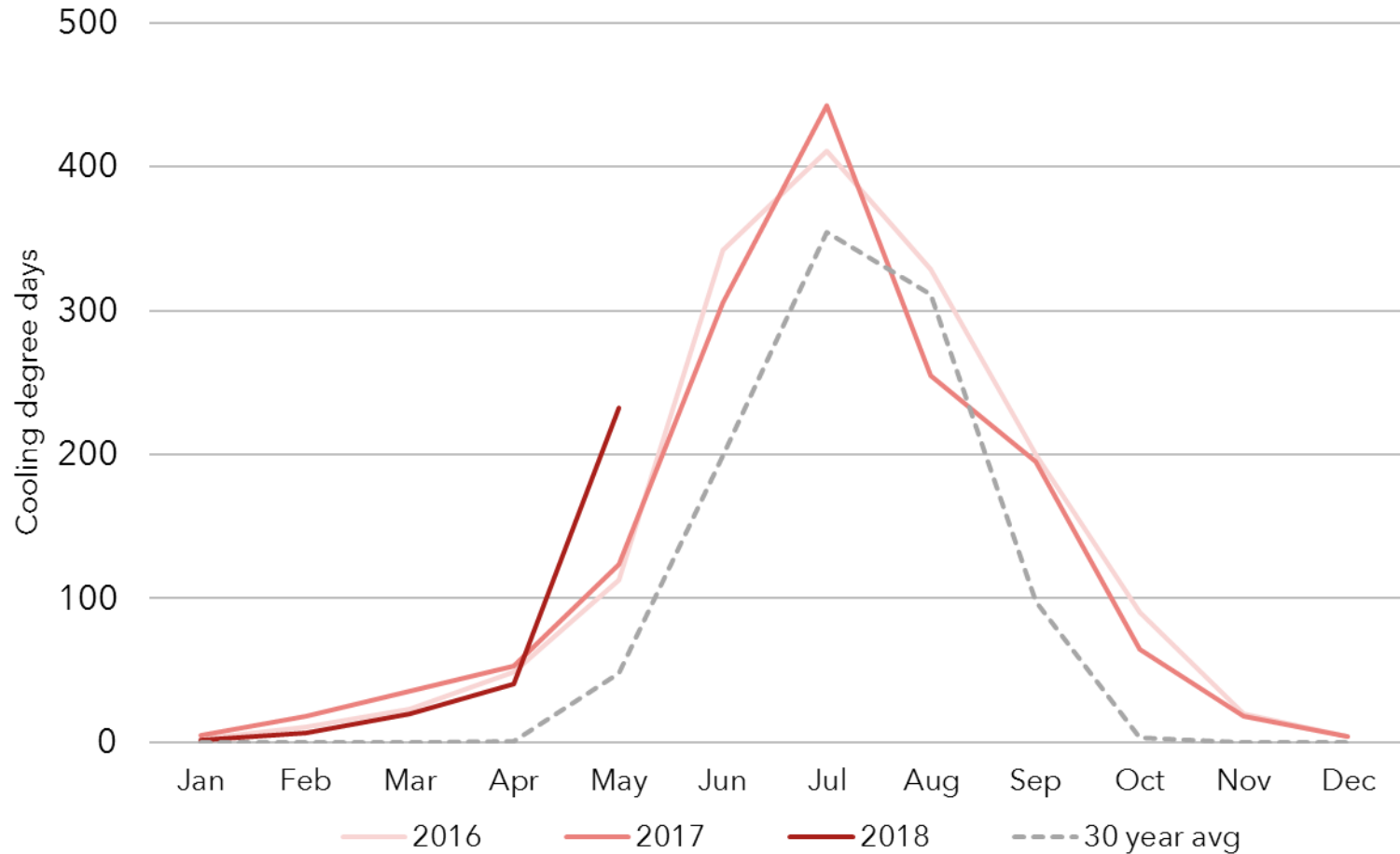
Spring 2018 highlights

- High loads
- Coal generation declined, while wind generation grew
- Low energy prices and gas costs
- Negative price intervals decreased
- ARR year-in-review

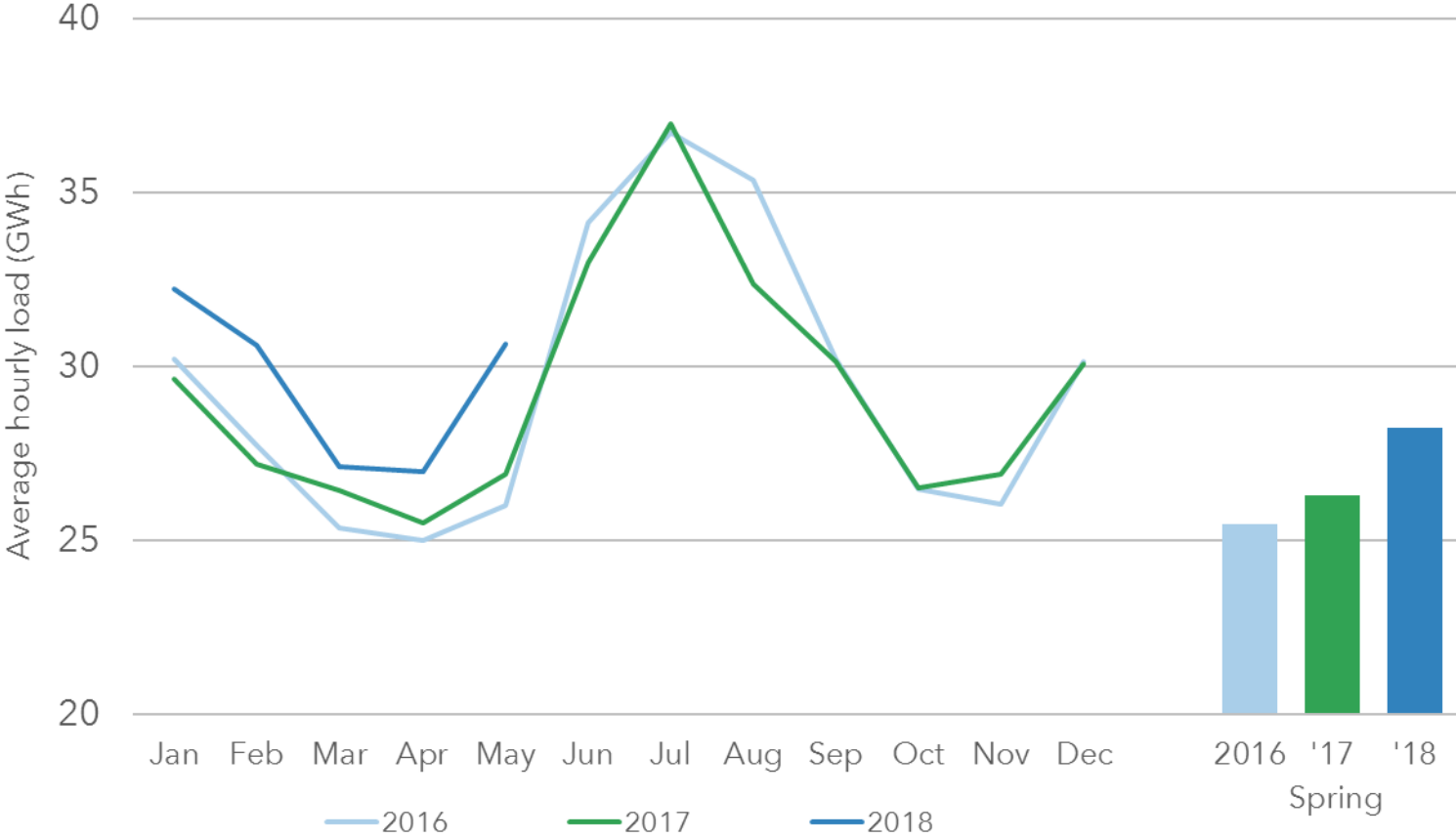
Colder temperatures in early 2018



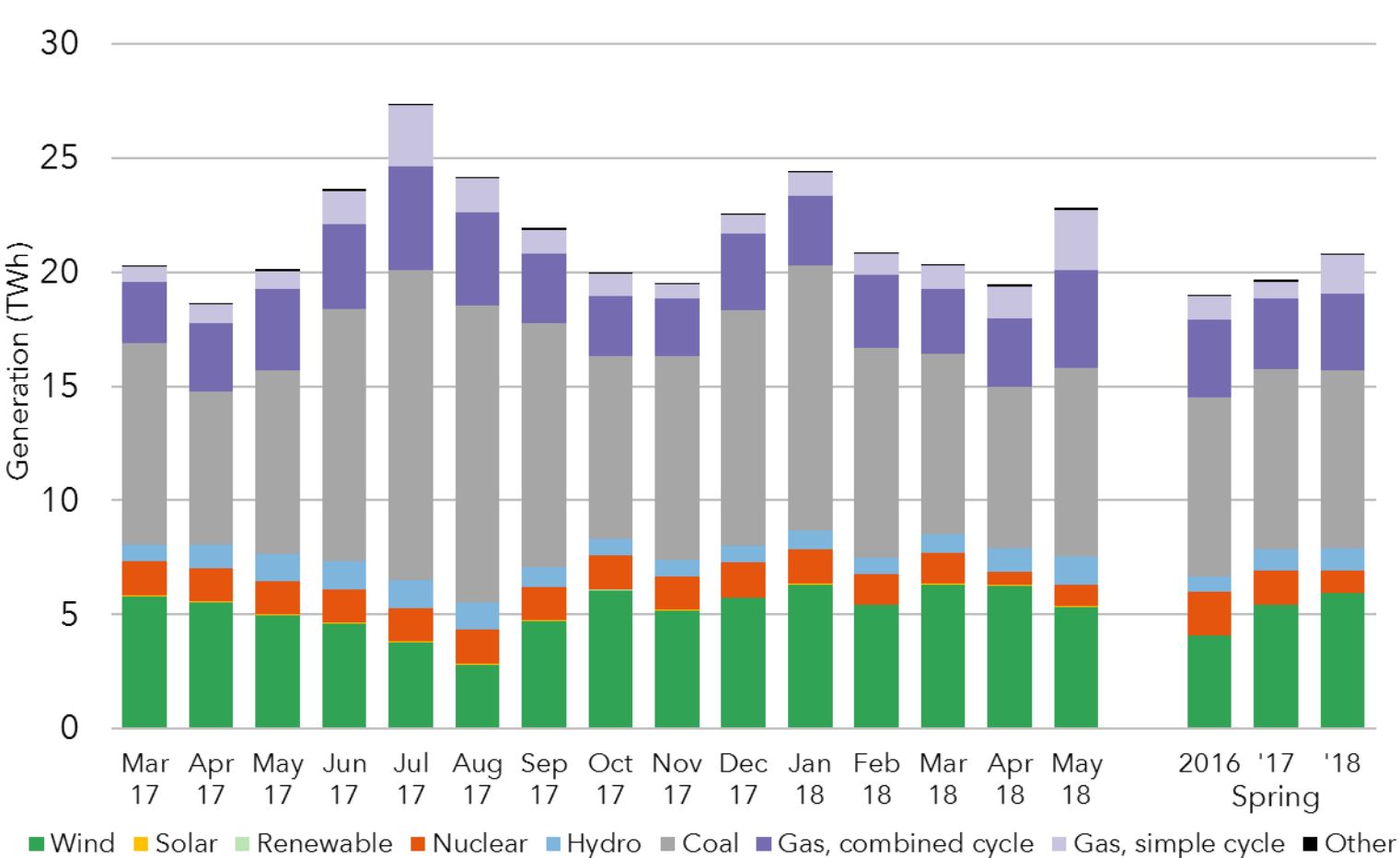
Warmer temperatures in May



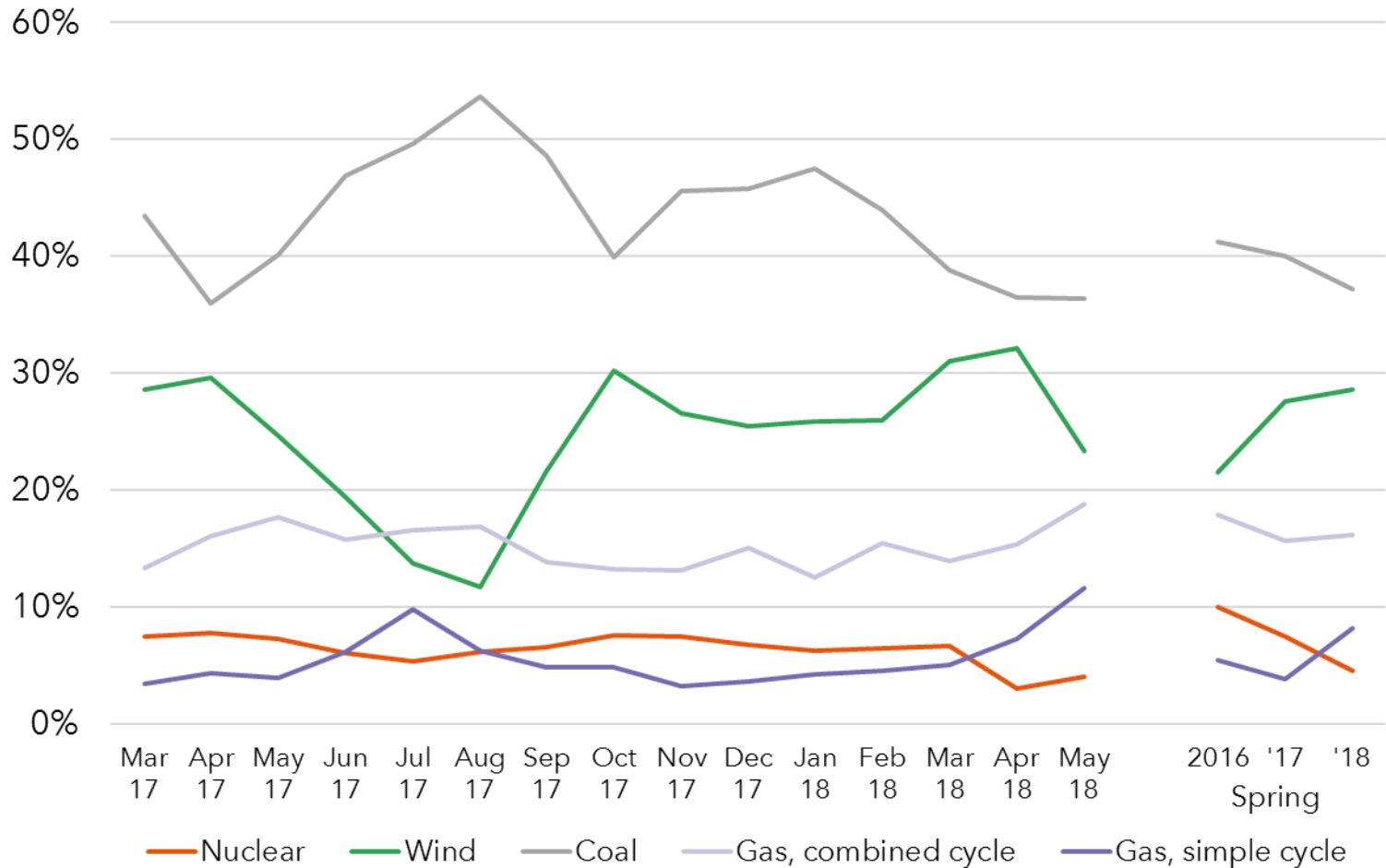
Load increased in early 2018



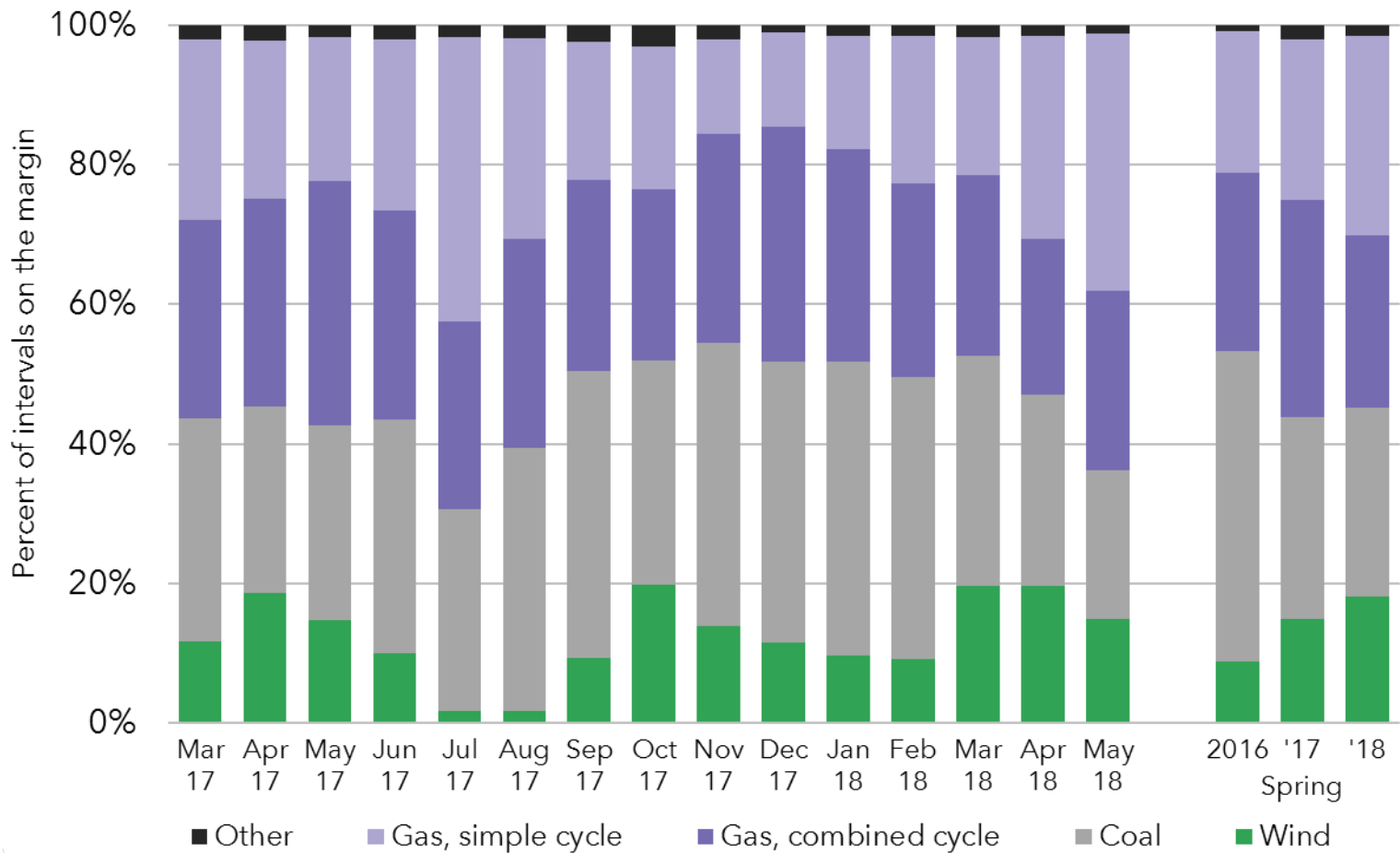
Generation increased as well



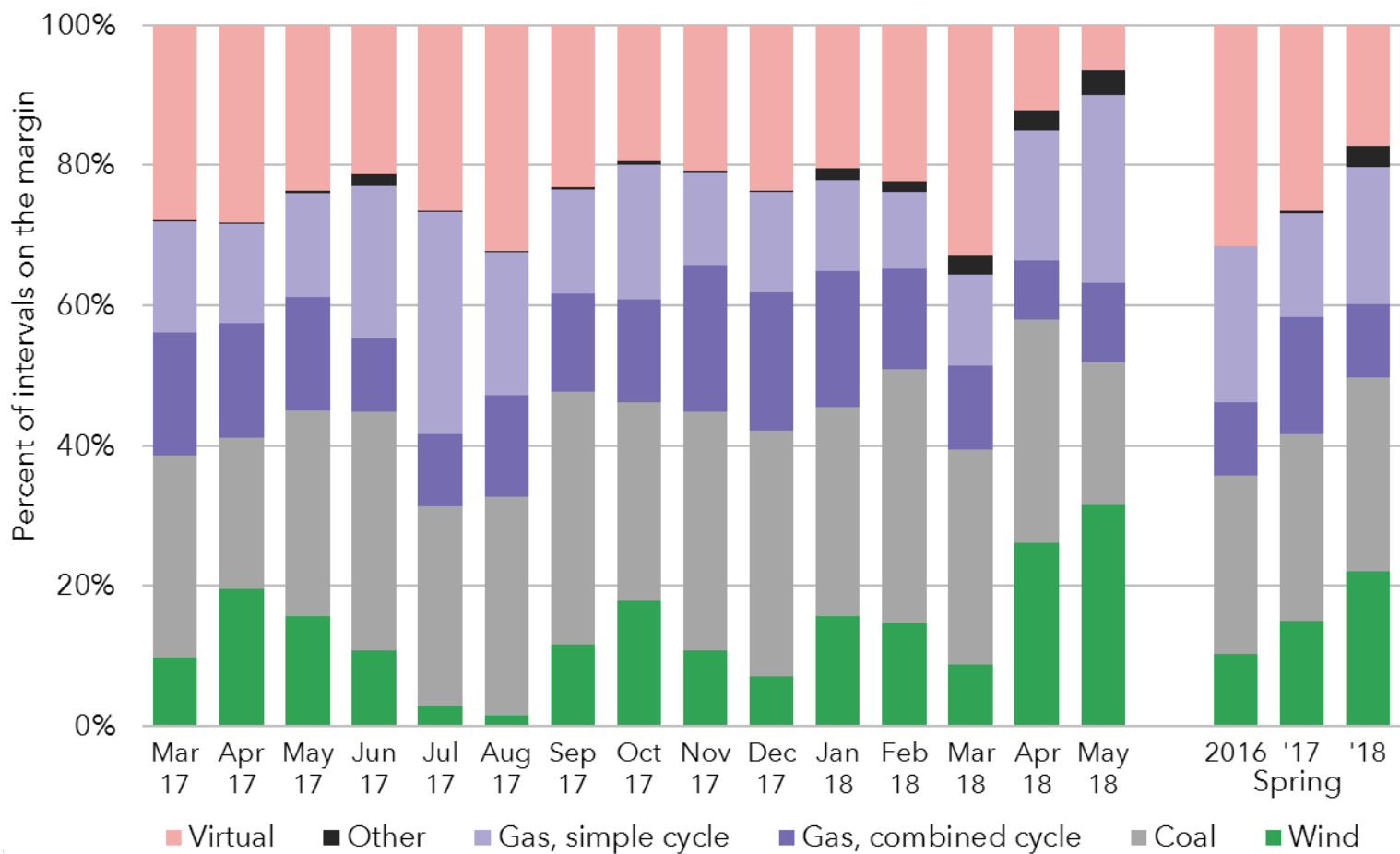
Coal generation declining, while wind generation is growing



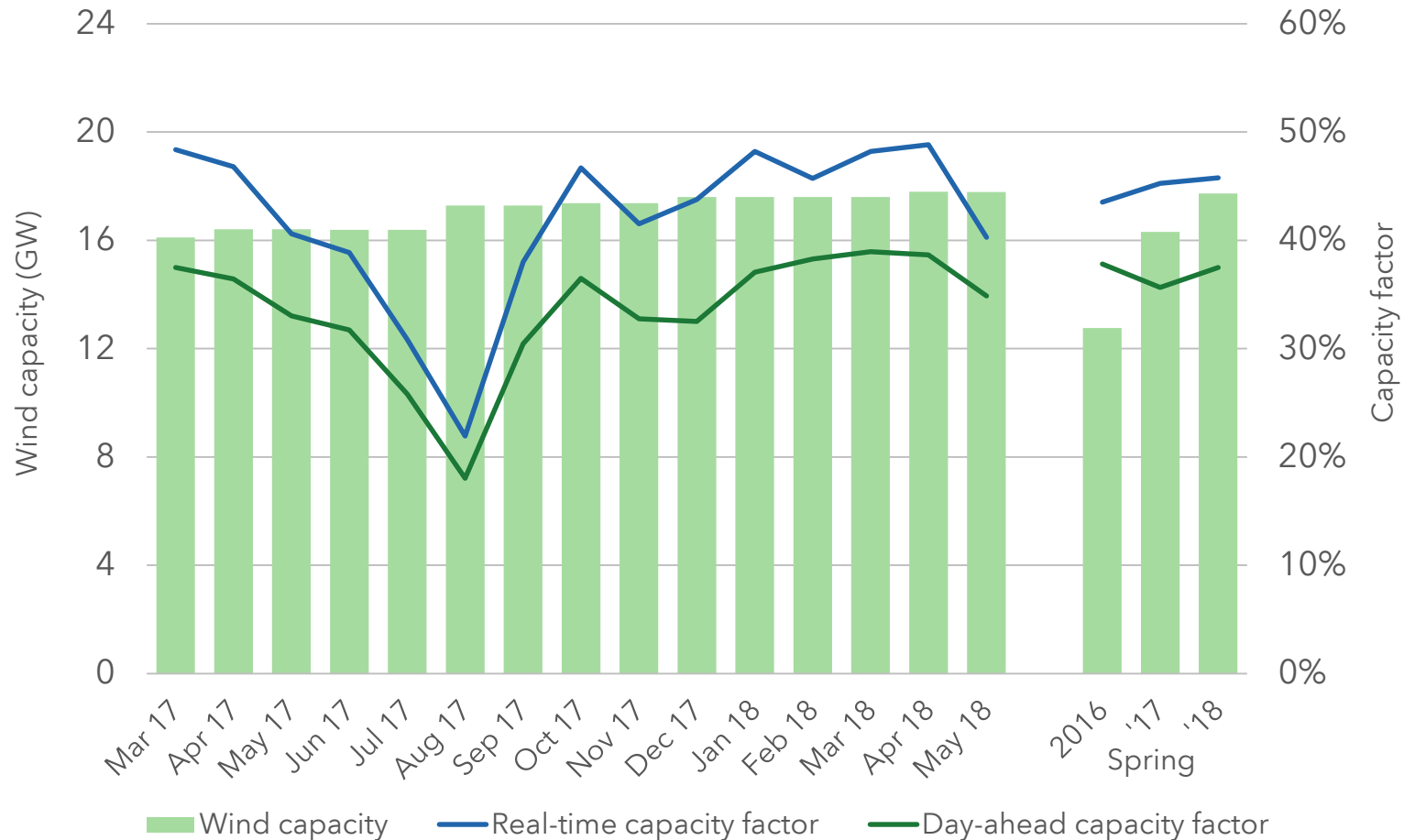
Wind setting prices more frequently in real-time



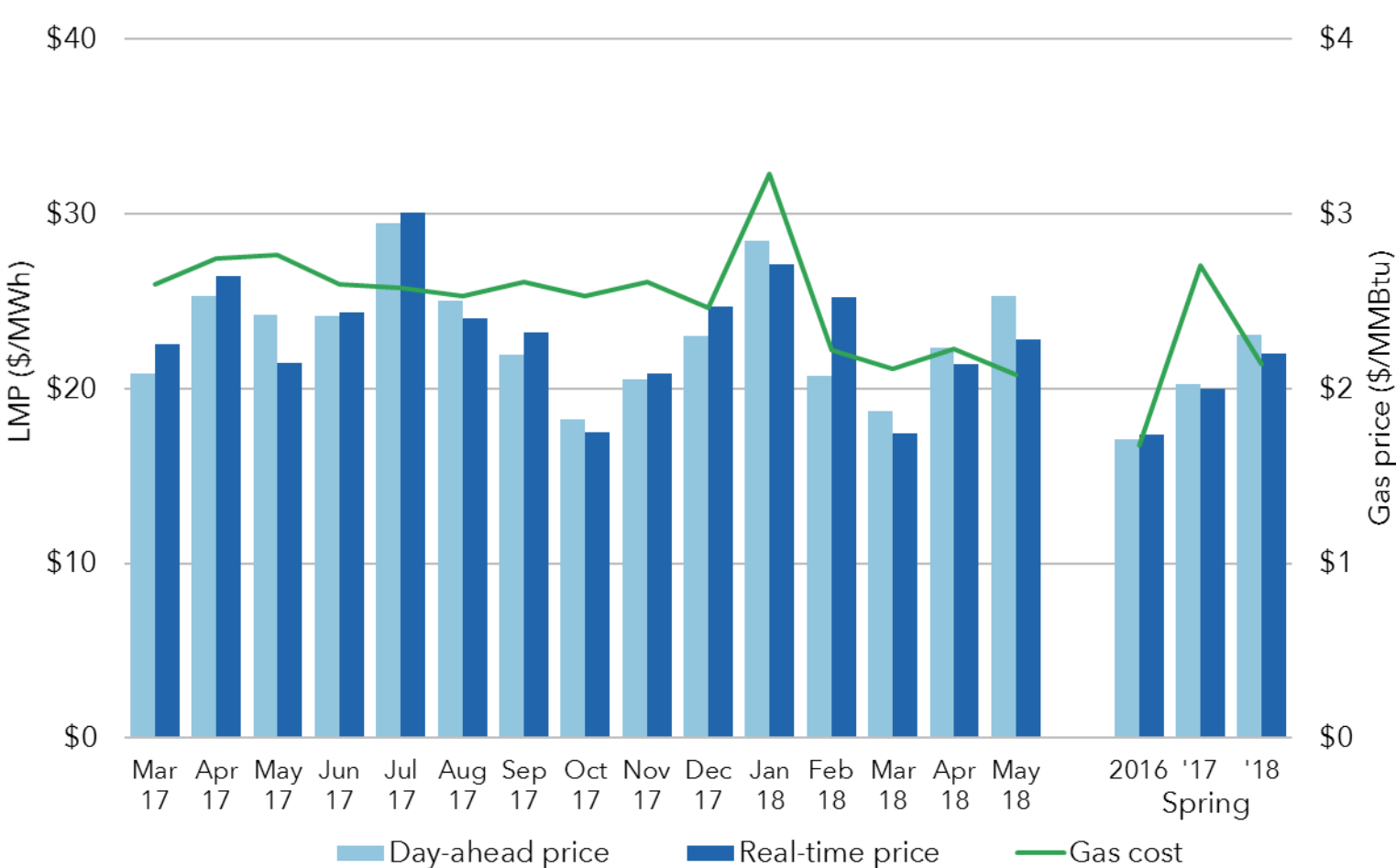
Virtual transactions setting prices less frequently in day-ahead



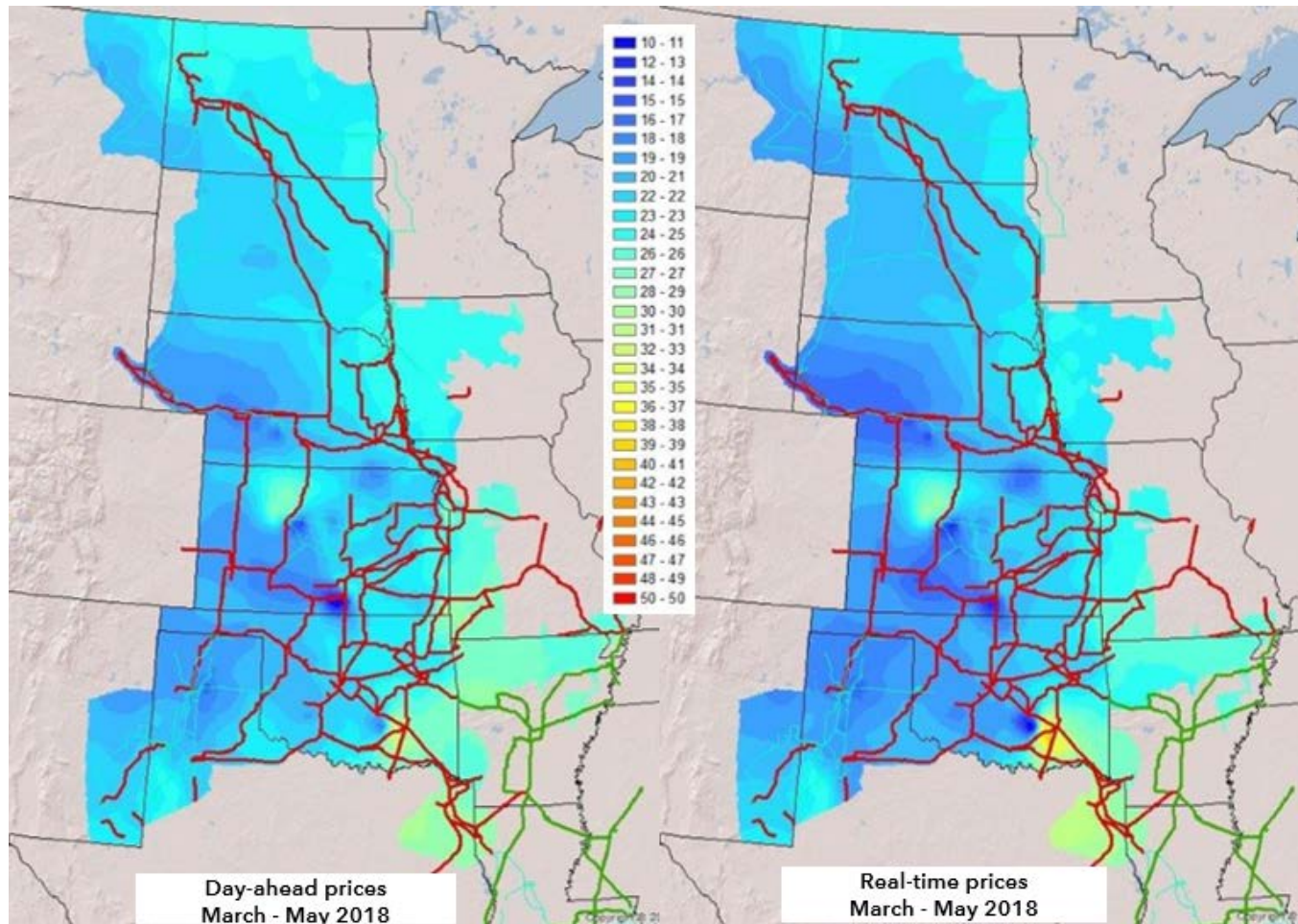
Wind capacity continues to grow



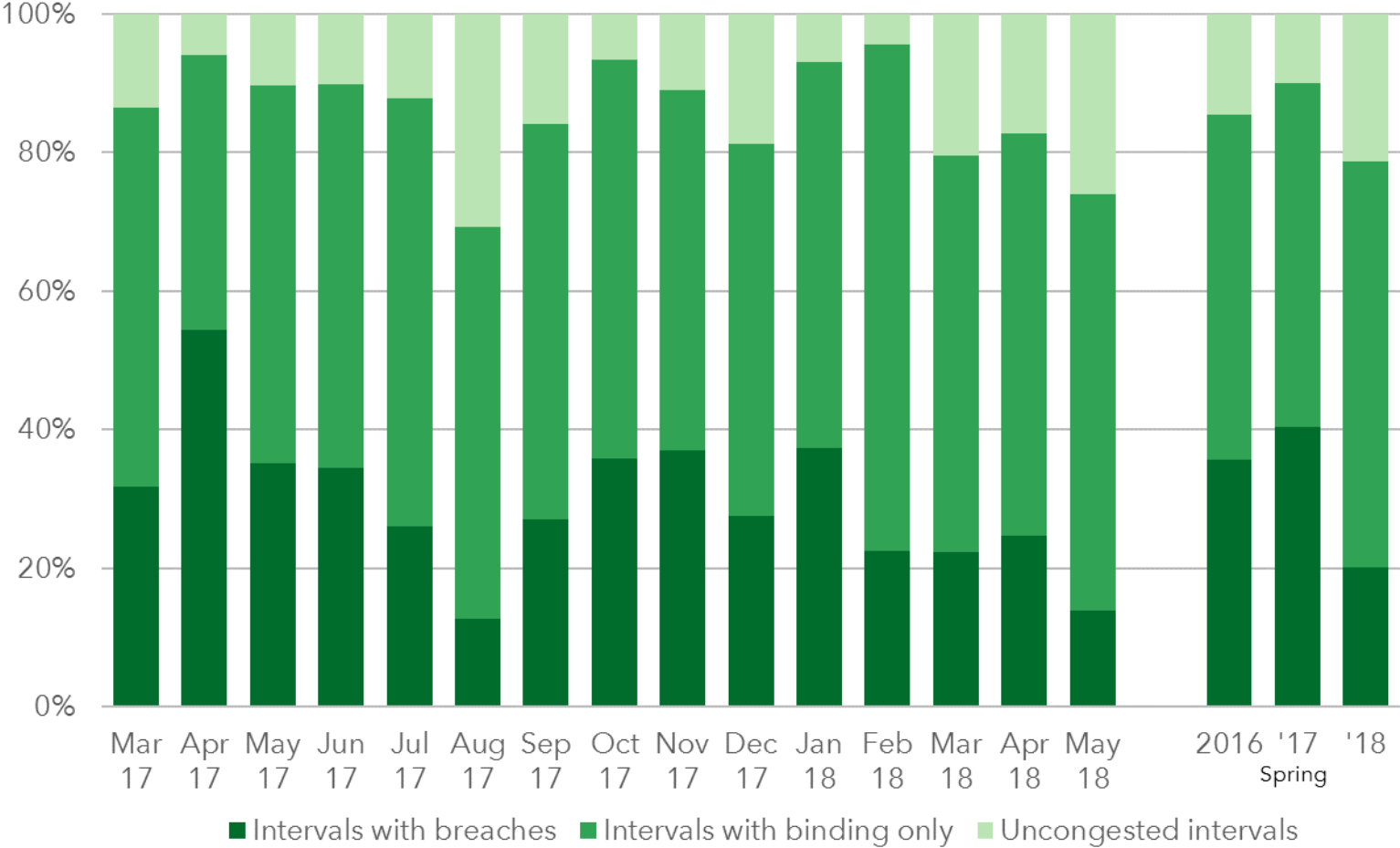
Prices remained low



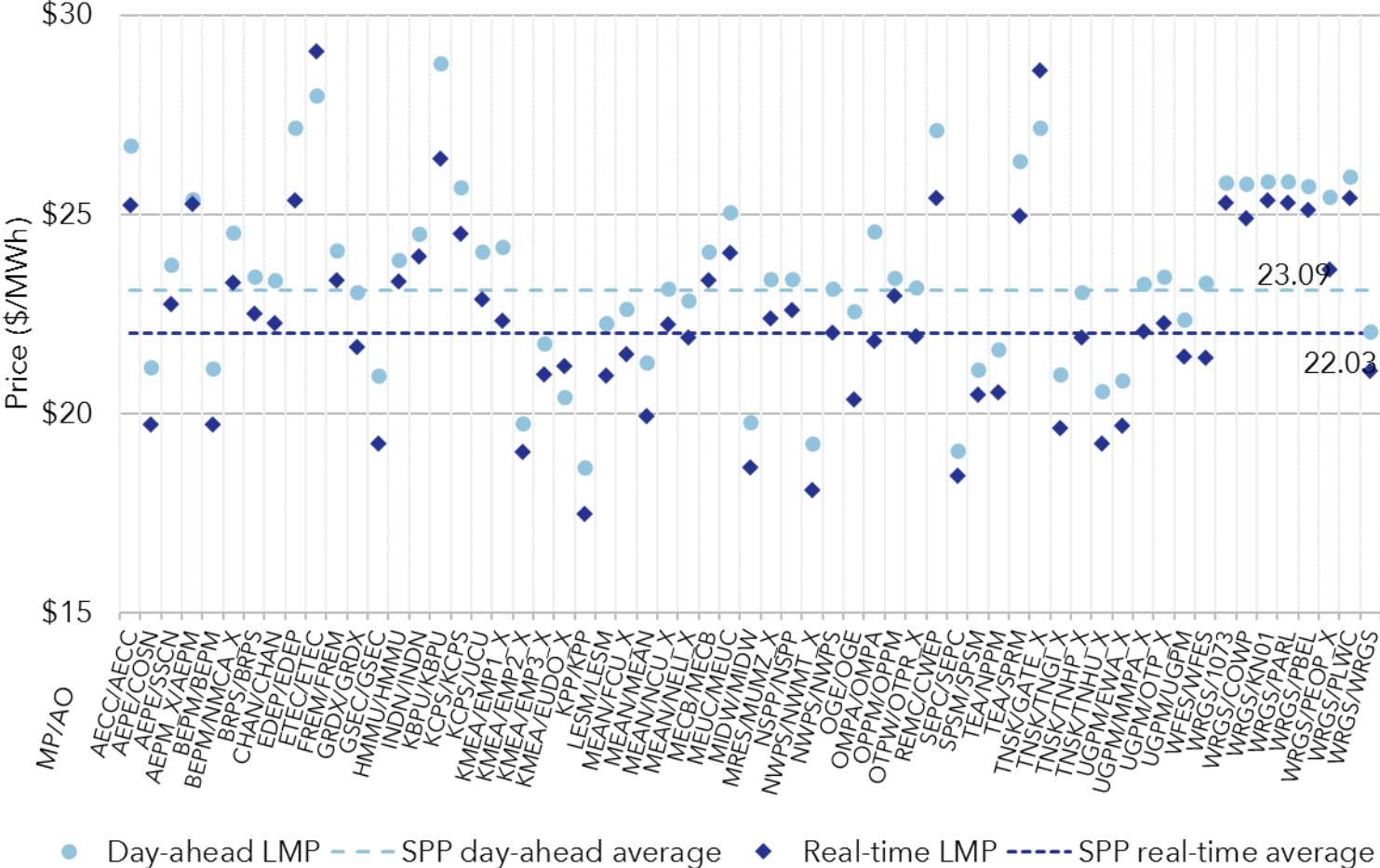
Congestion pattern similar between markets



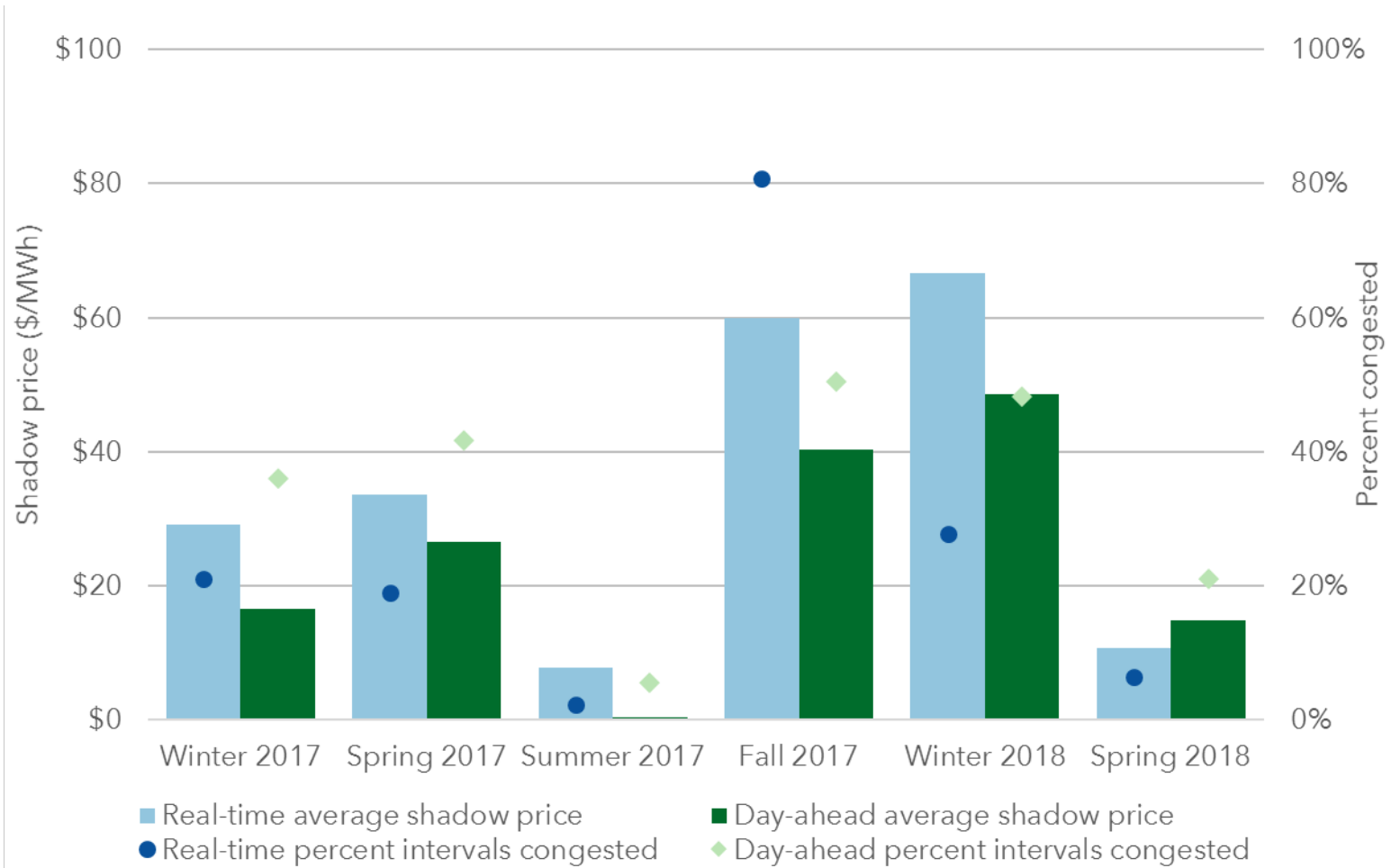
Breached intervals declining



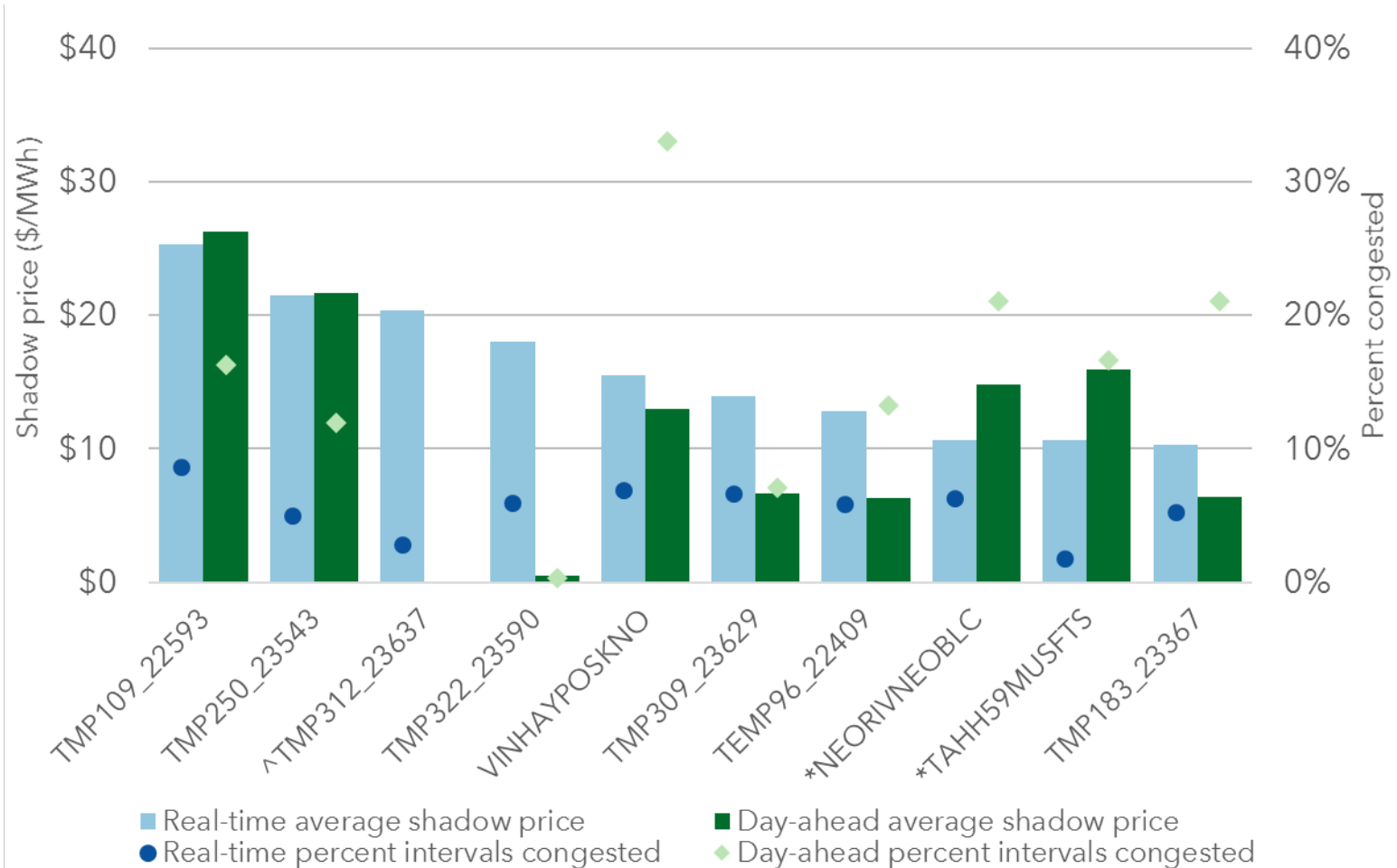
Prices vary across footprint



Congestion at Neosho - Riverton constraint has abated

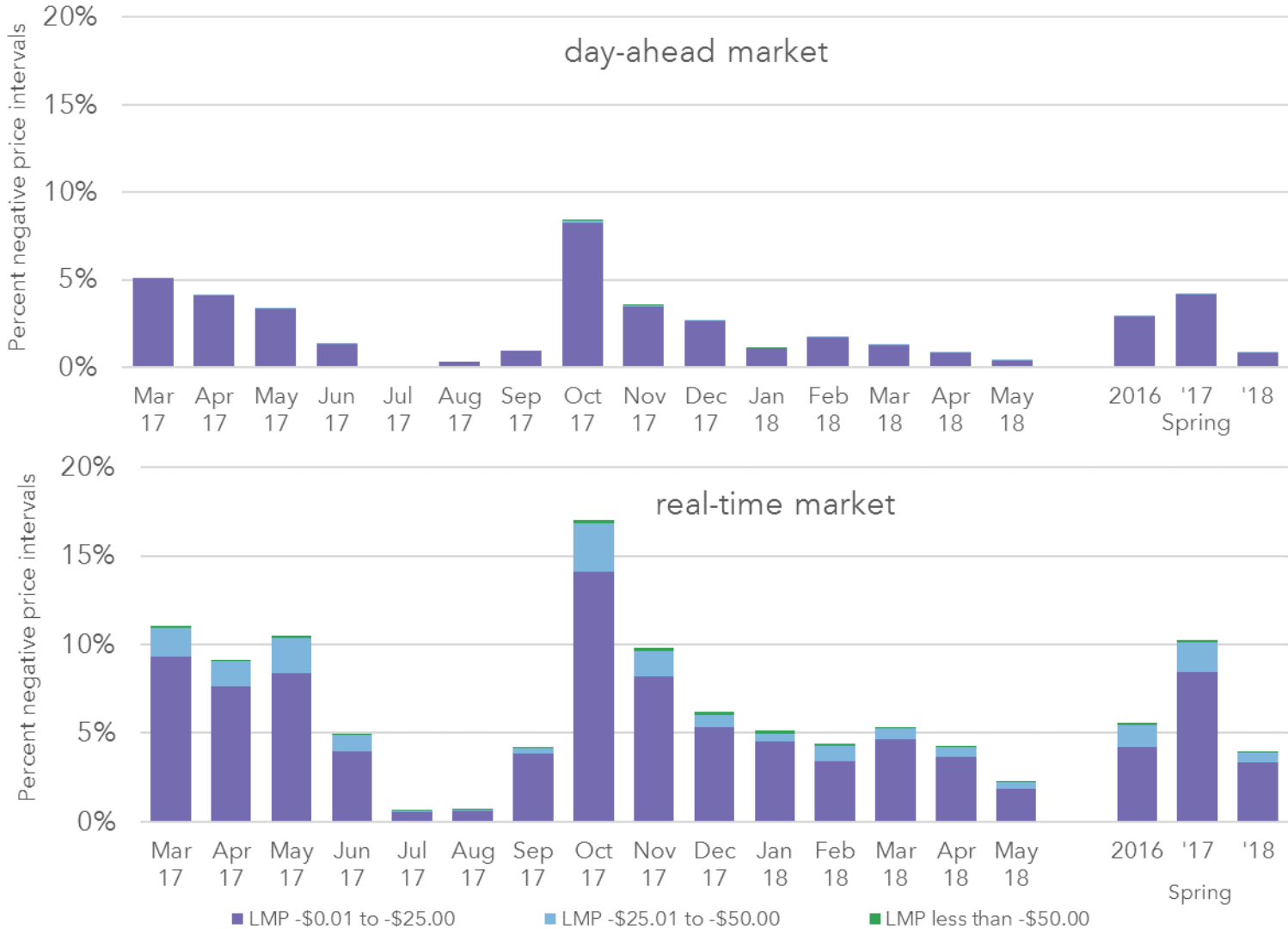


Congestion has shifted

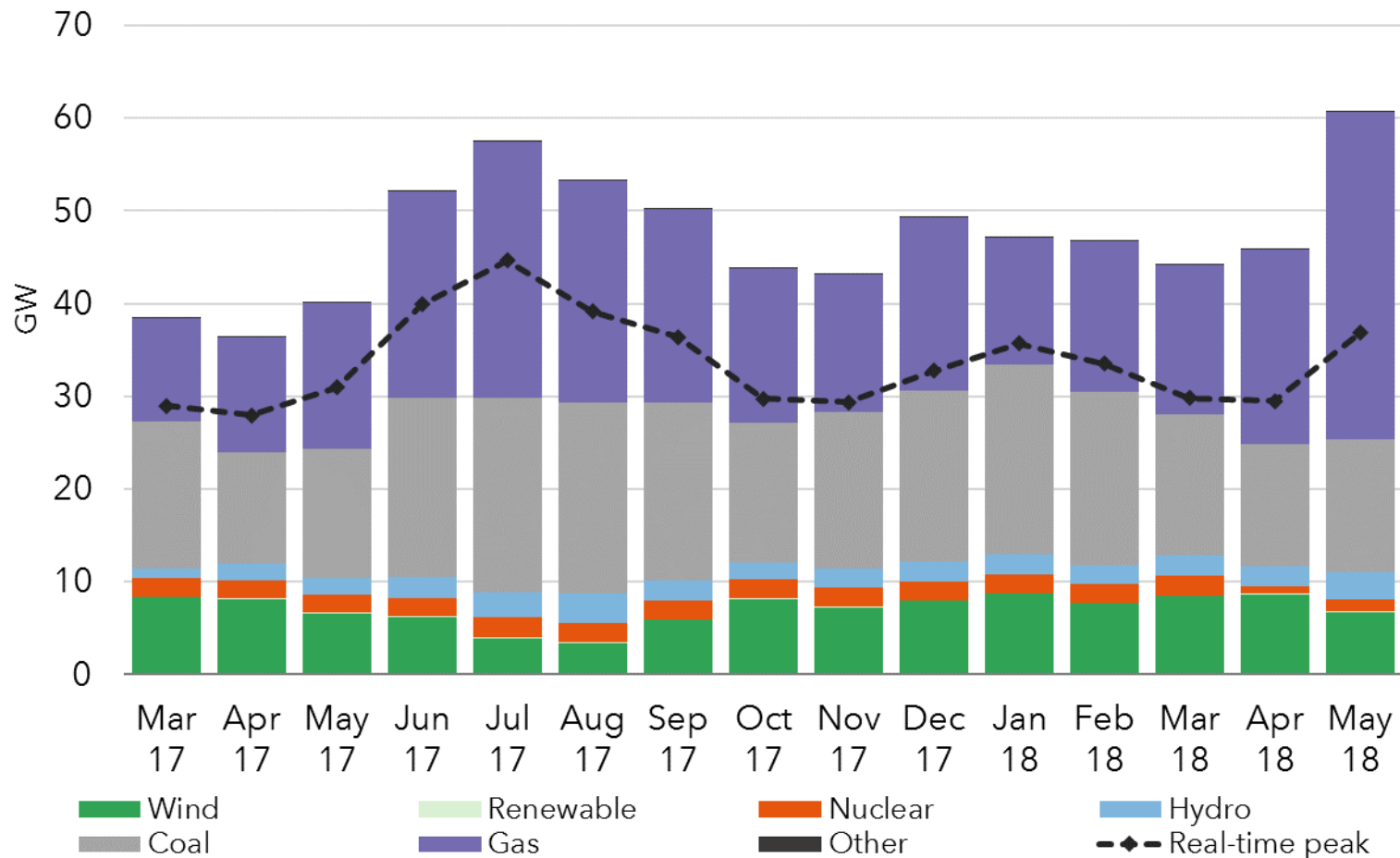


* SPP market-to-market
 ^ MISO market-to-market

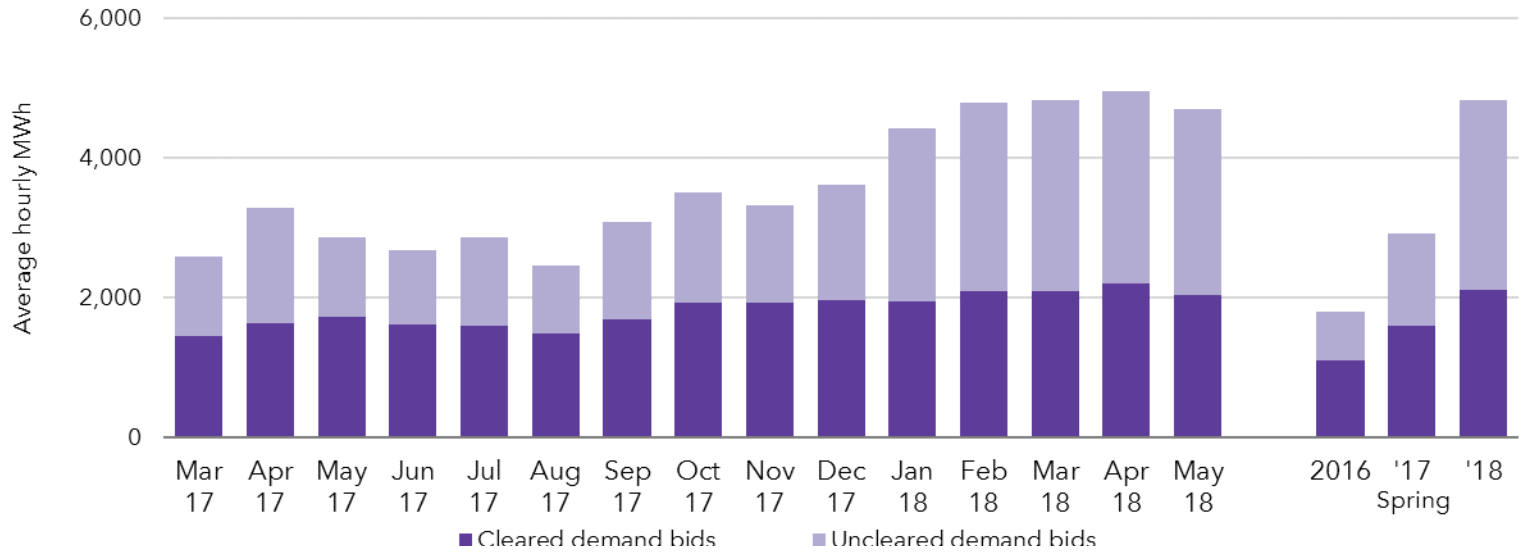
Negative price intervals declined



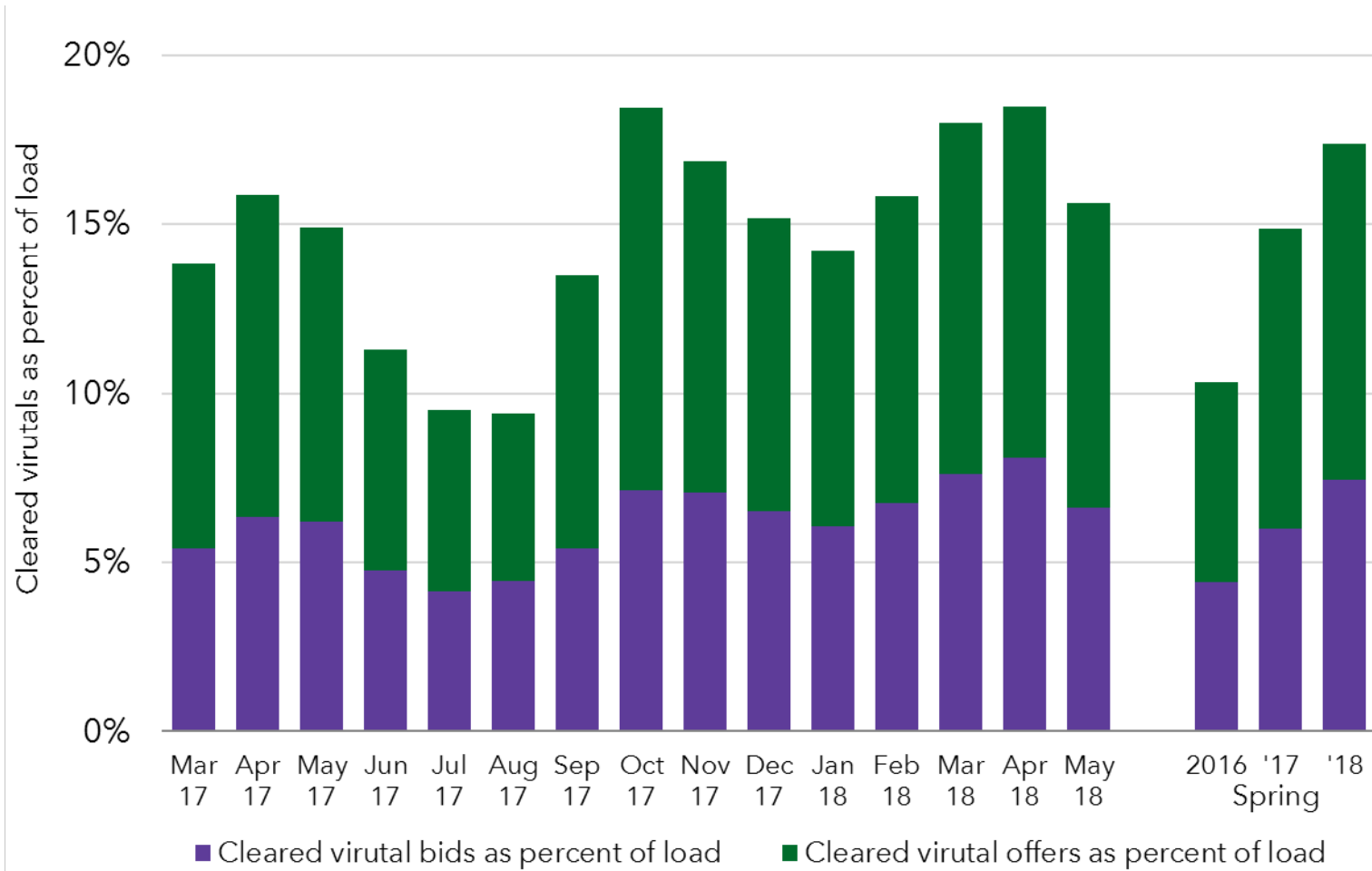
Coal and gas remain largest portion of unit commitment



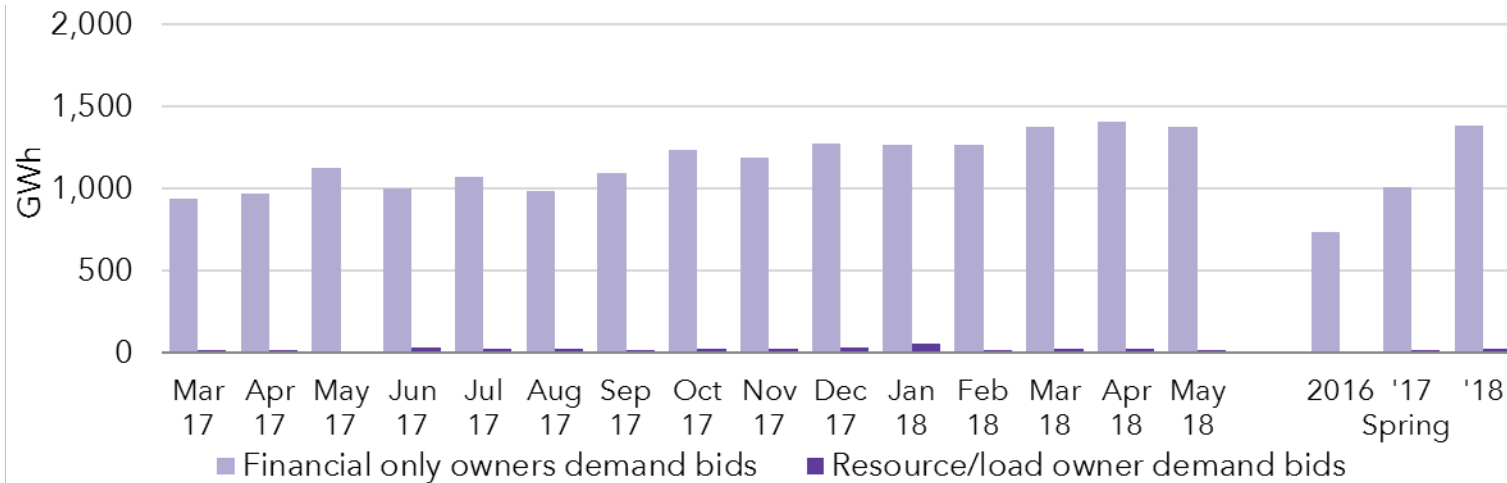
Virtual transactions continue to grow



Virtual transactions compared to load increasing



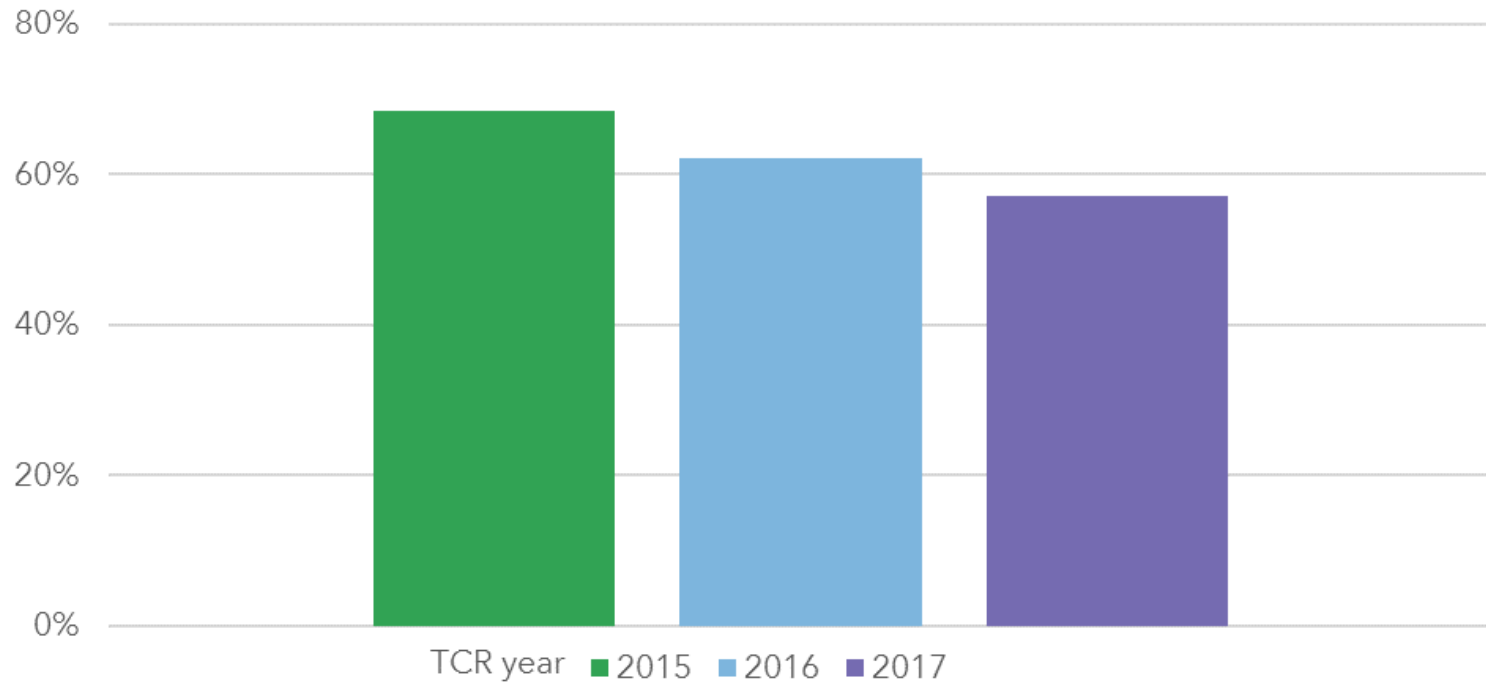
Most virtual transactions done by financial only participants



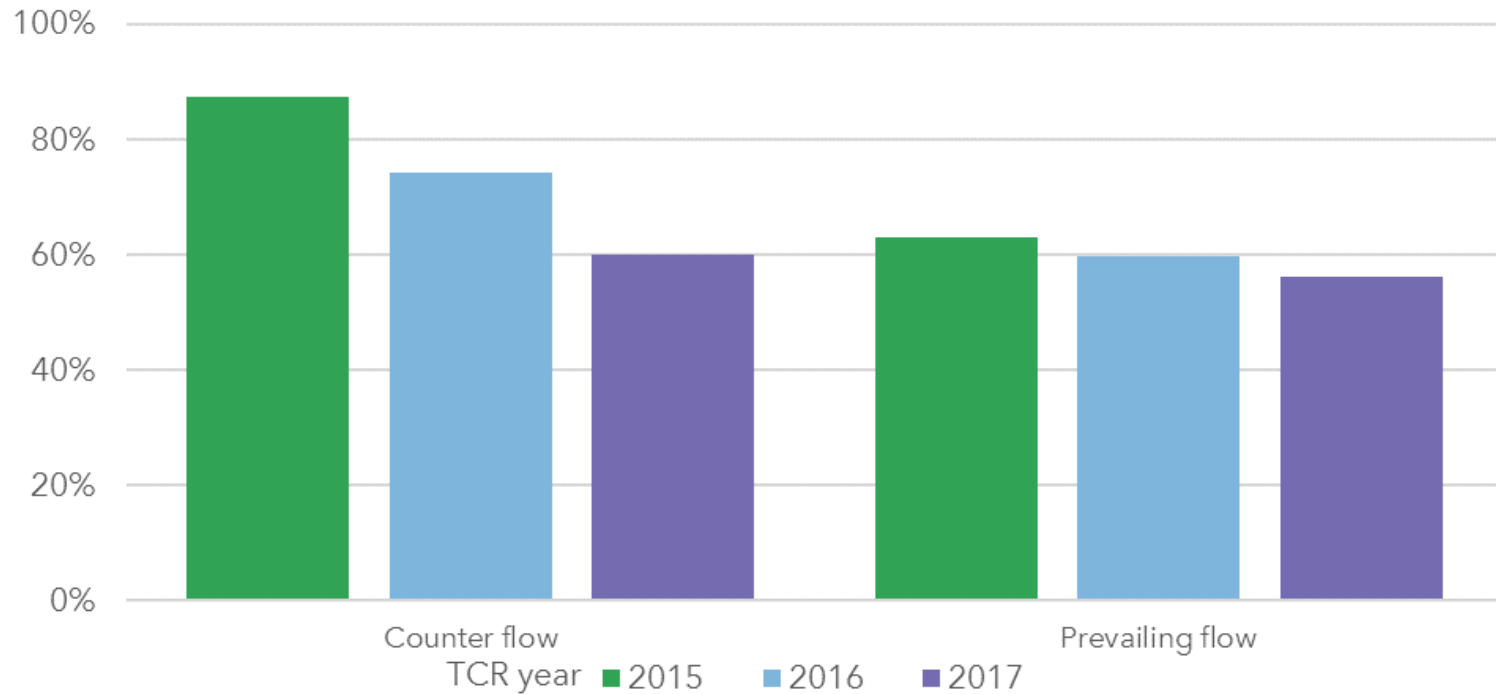
Transmission congestion rights and auction revenue rights

- **successful ARR nominations have decreased**
- **the market's overall need for hedges has increased**
- **nomination behavior has remained relatively consistent**

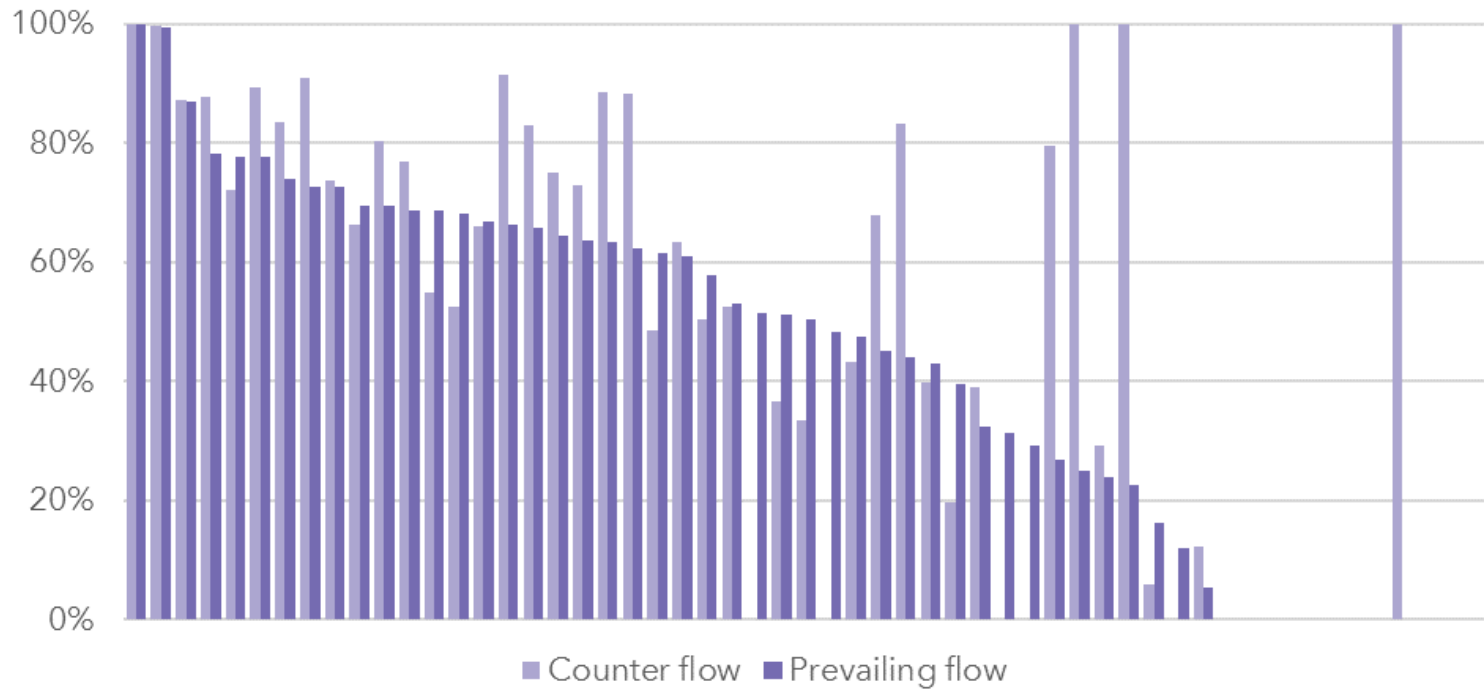
Percentage of ARR awards to ARRs nominated



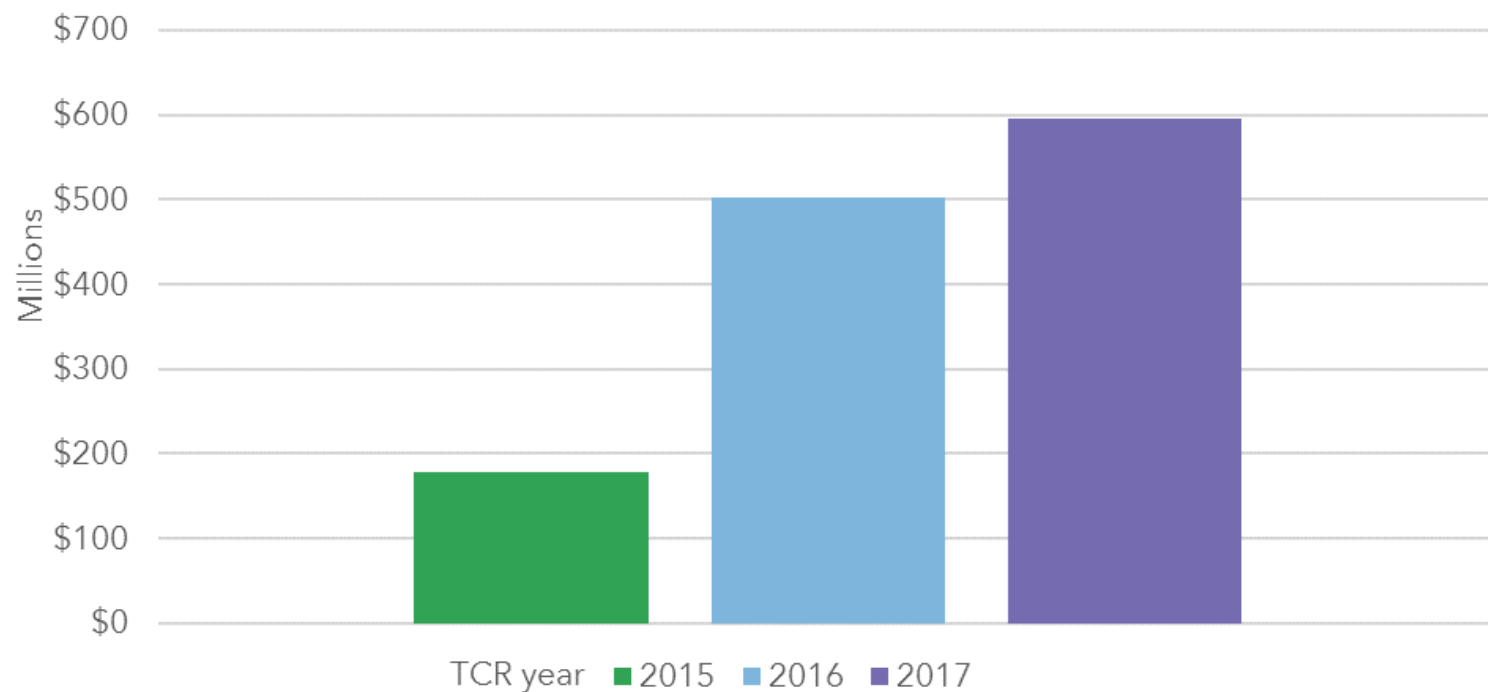
Percentage of ARR awards to ARRs nominated by flow type



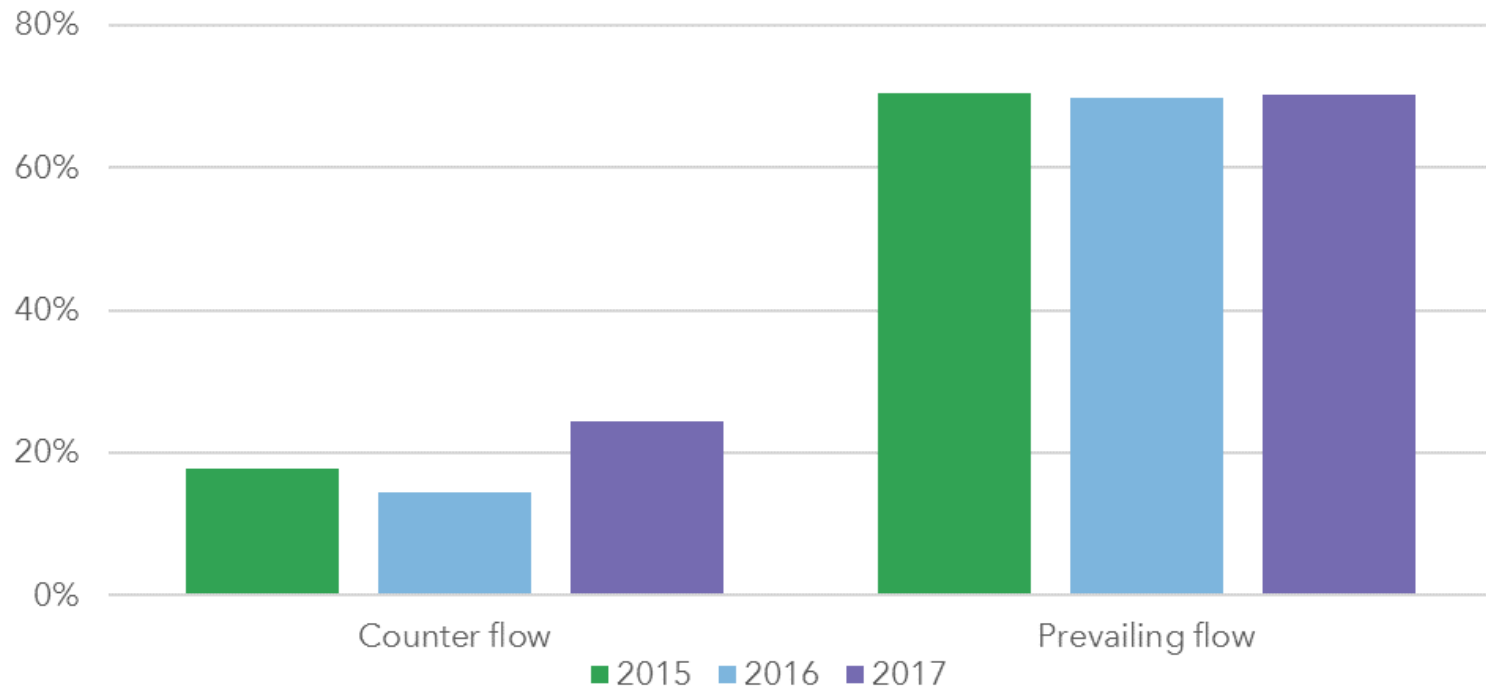
Percentage of ARR awards to ARRs nominated by market participant, 2017 TCR year



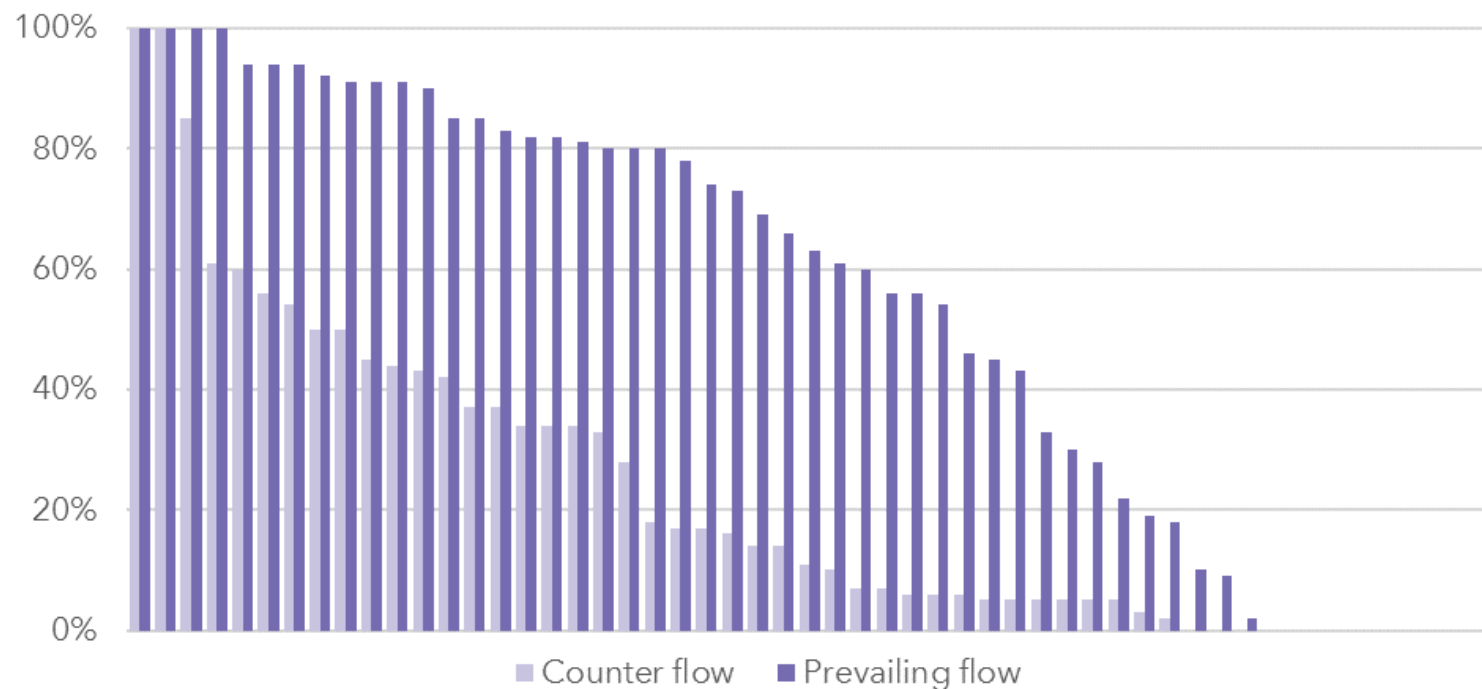
Day-ahead congestion rent



Percentage of ARR nominations to candidate ARRs



Percentage of ARR nominations to candidate ARR by market participant, 2017 TCR year



Net congestion revenue by market participant, 2017 TCR year

