

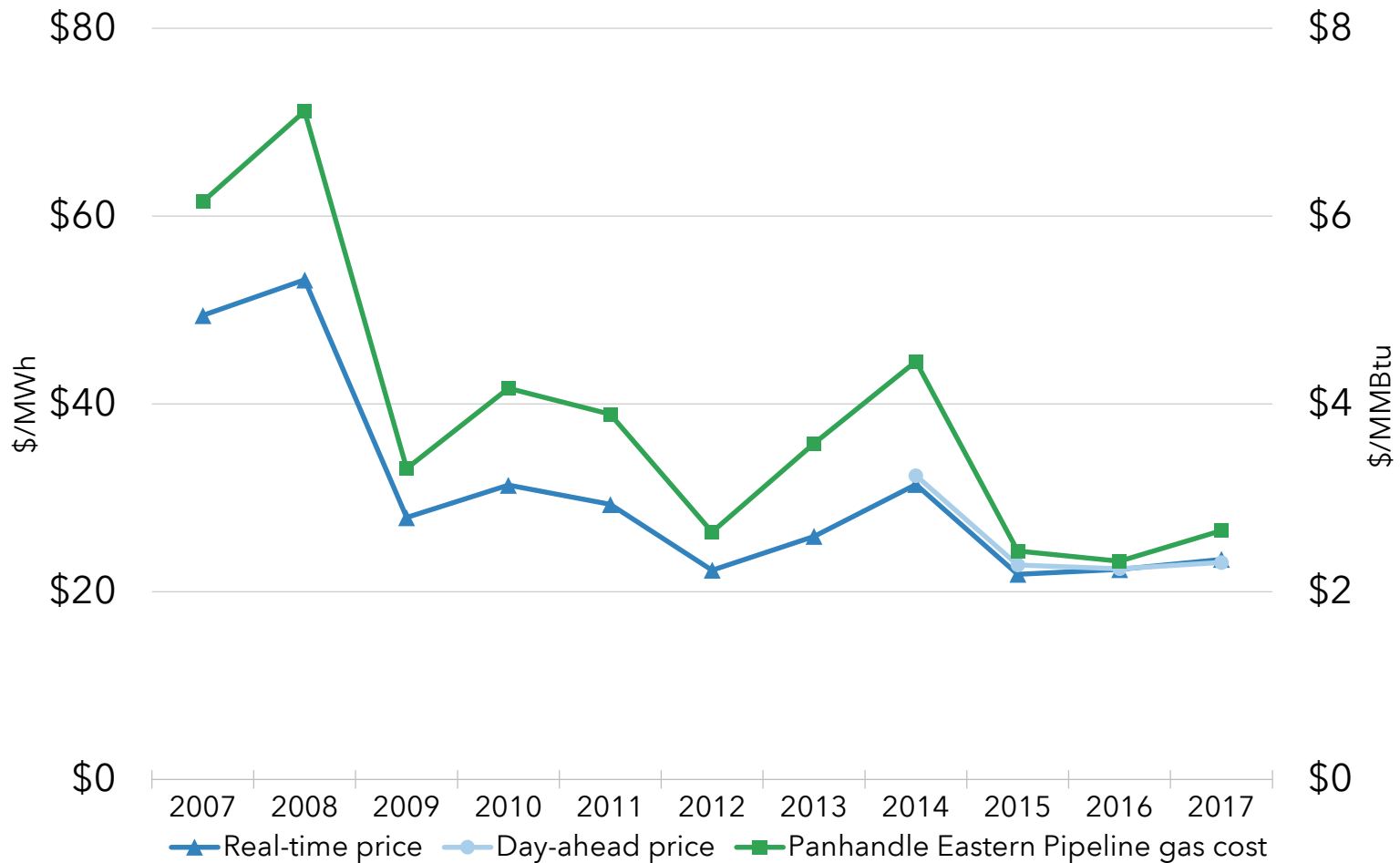


Market Monitoring Unit

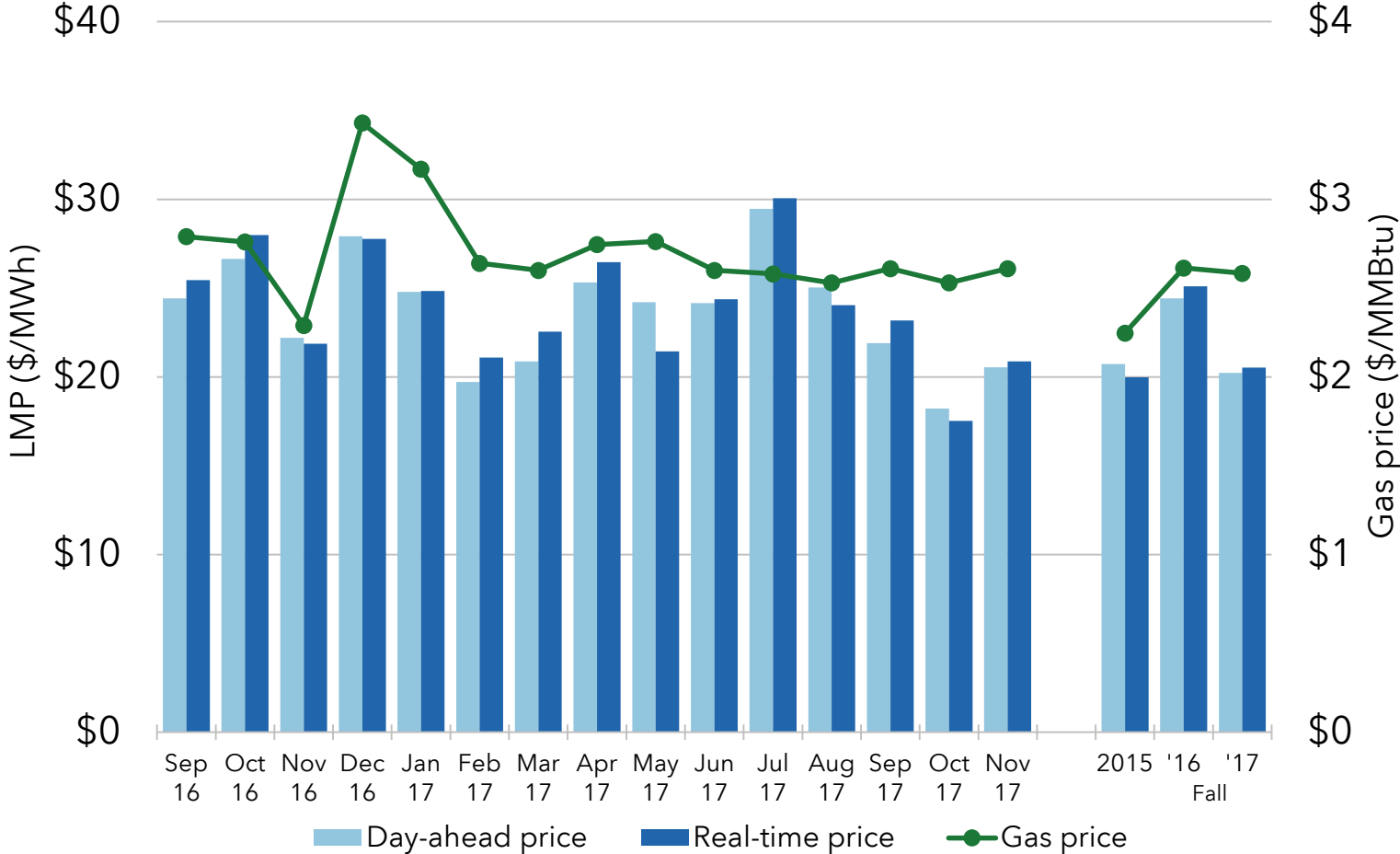
Fall 2017

Quarterly Report

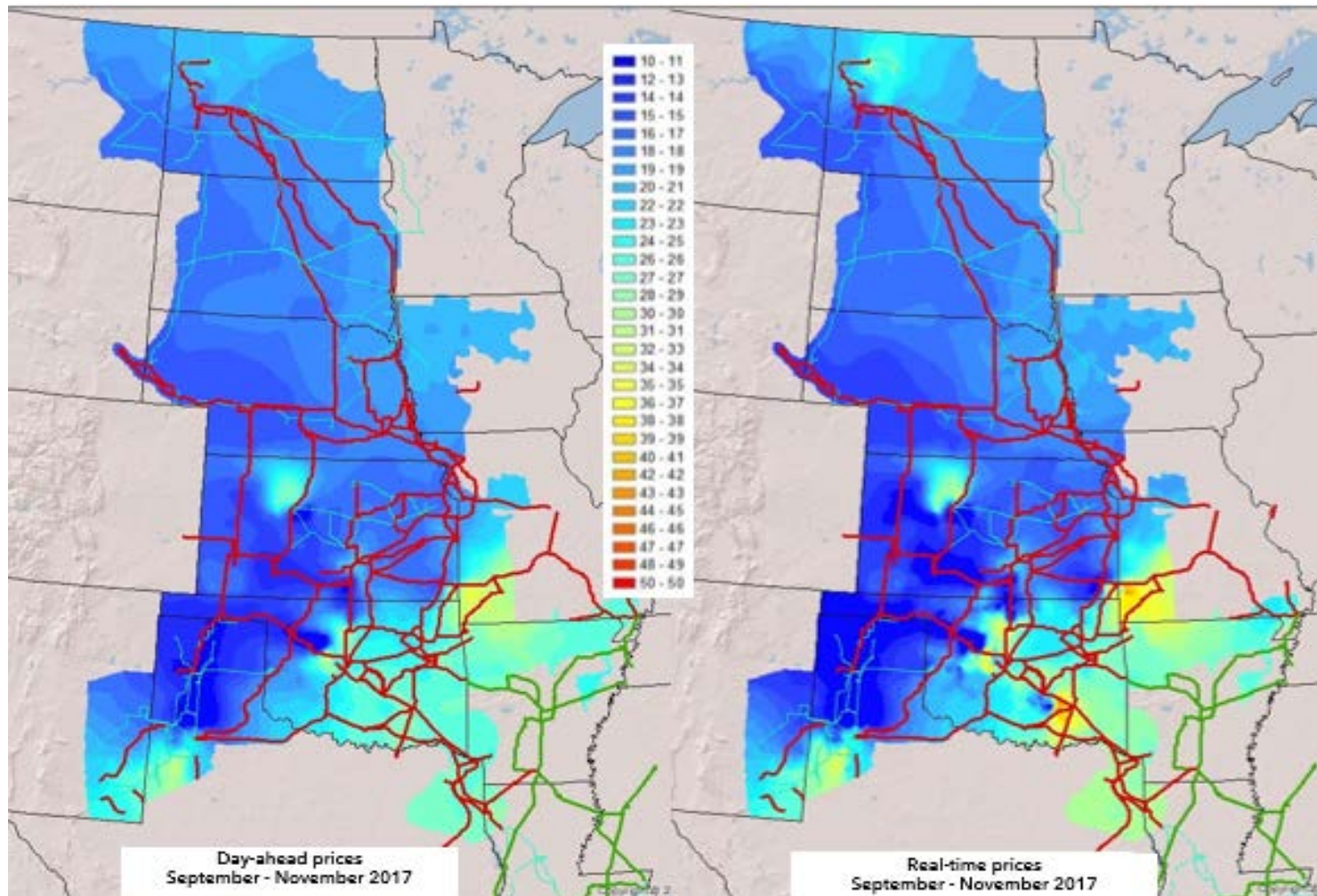
Gas cost and energy price closely correlated



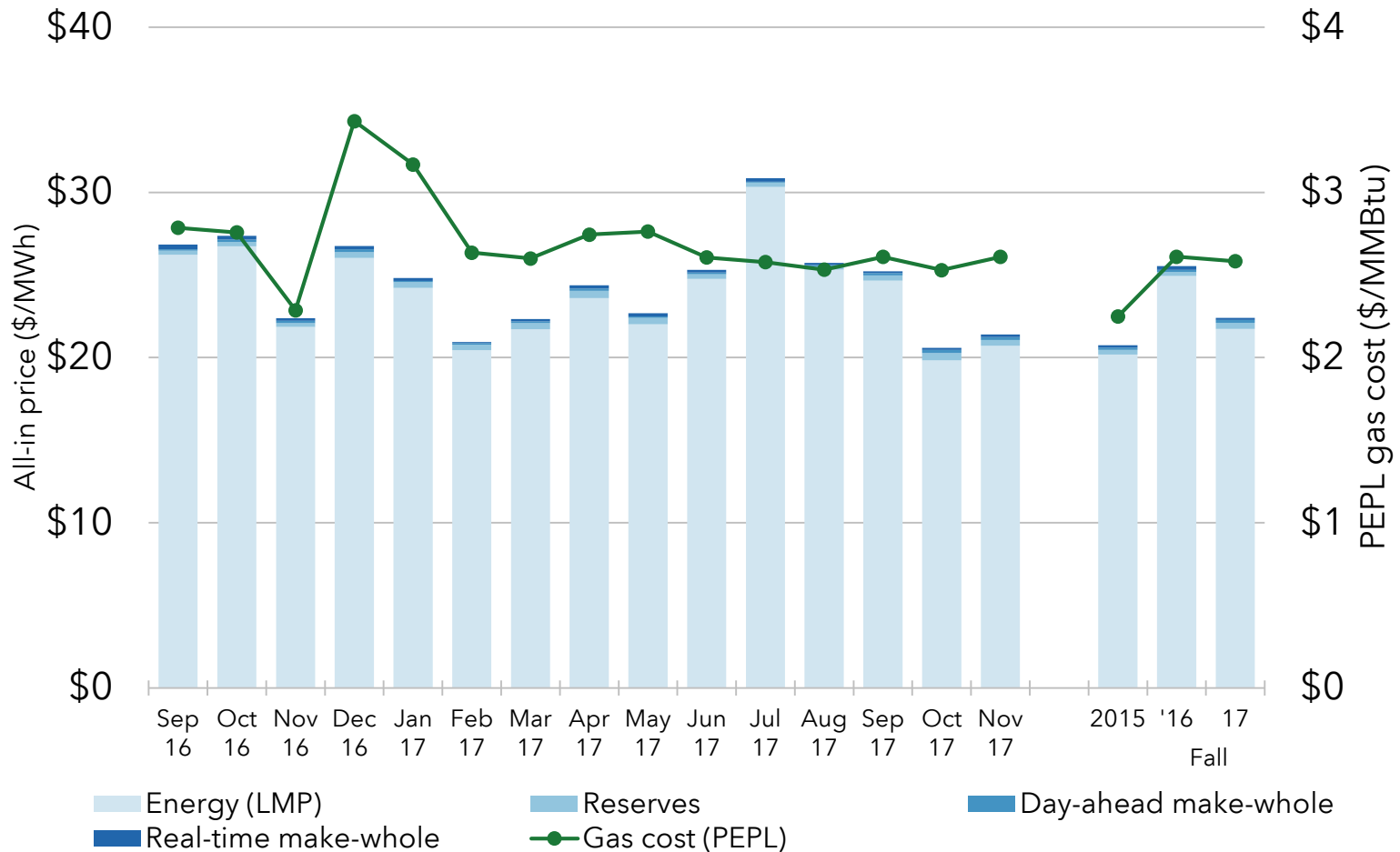
Prices remained low



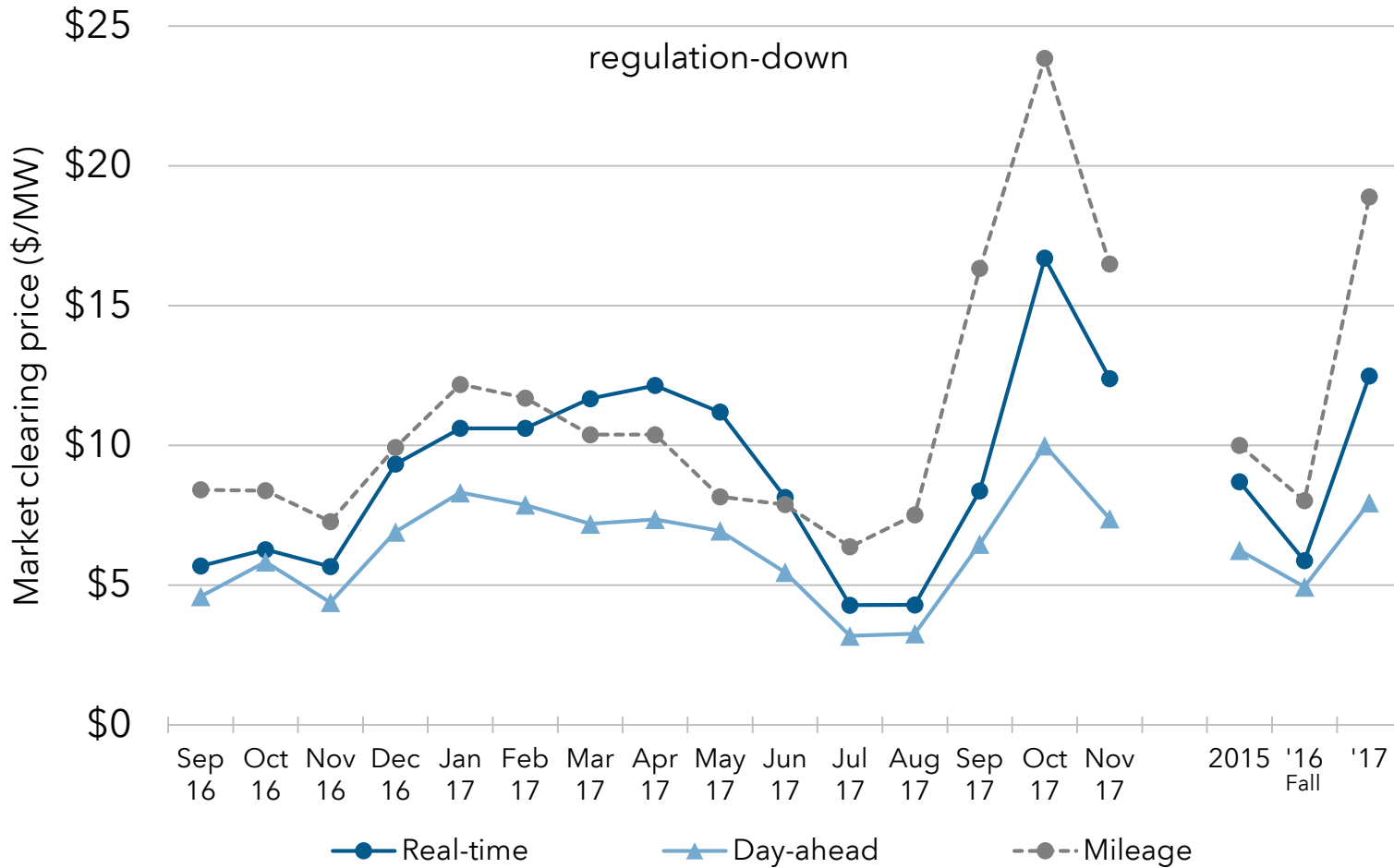
Congestion pattern similar between markets



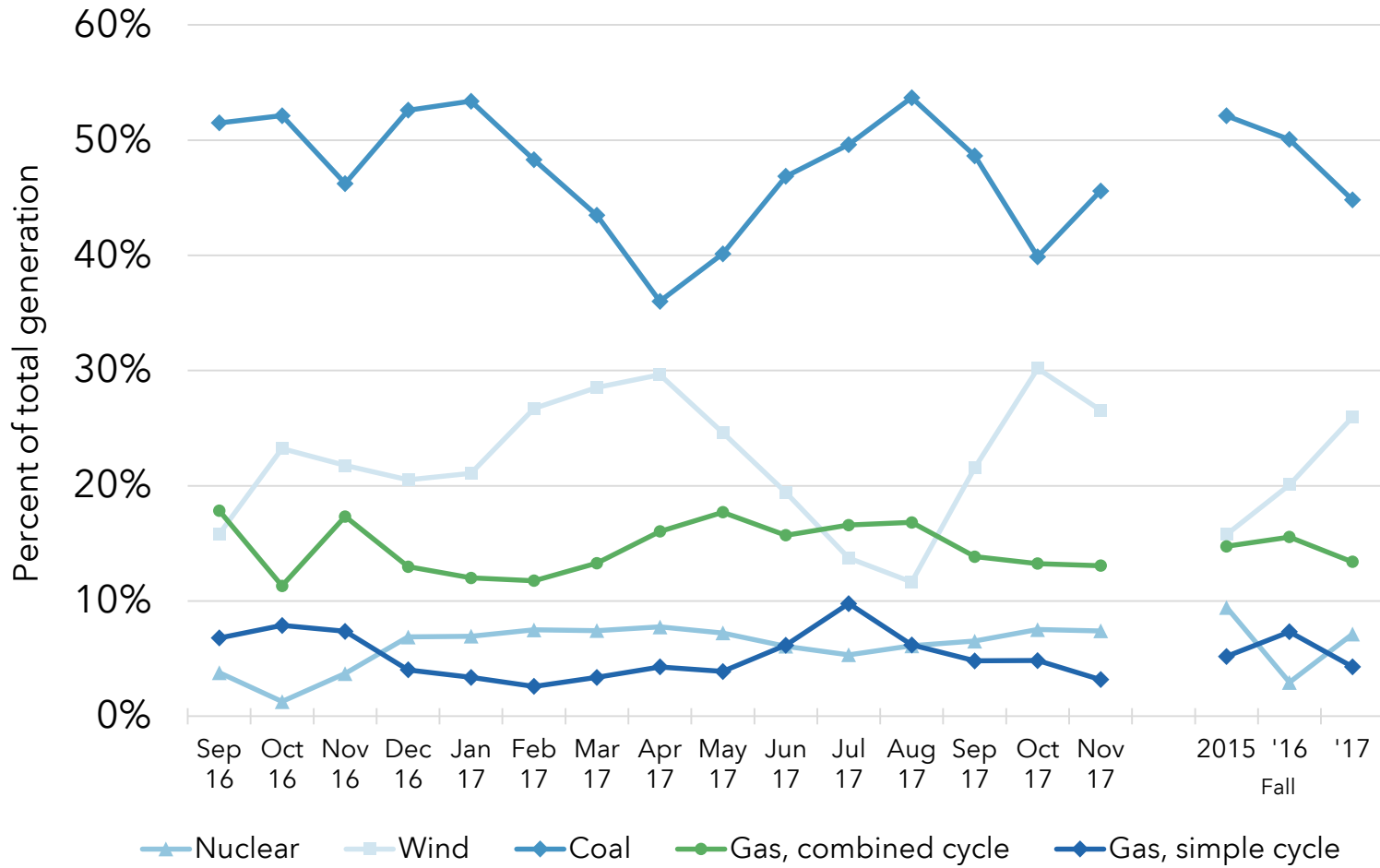
Uplift a very small portion of total costs



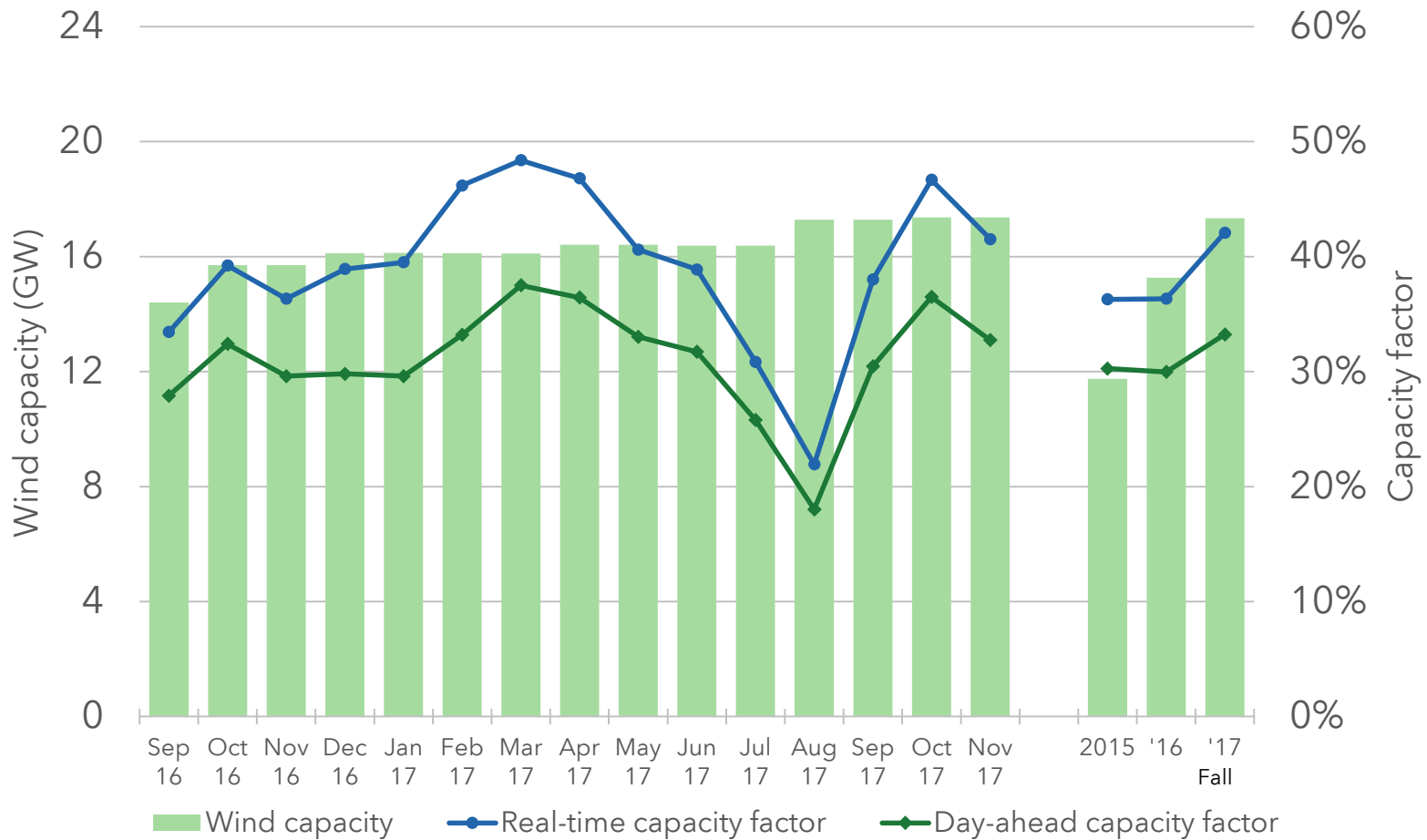
Steep increase in regulation-down and regulation-down mileage



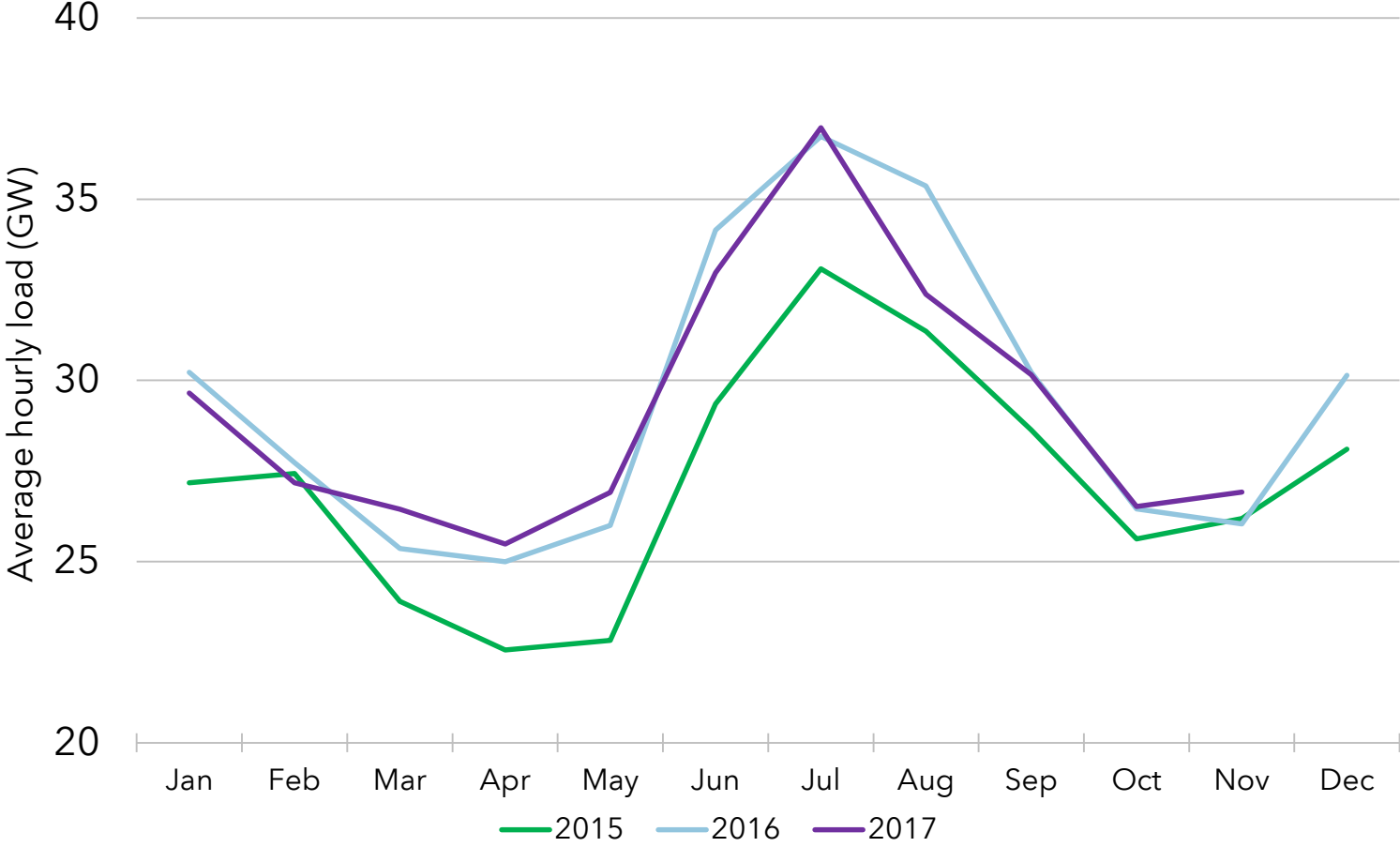
Coal generation declining, while wind generation is growing



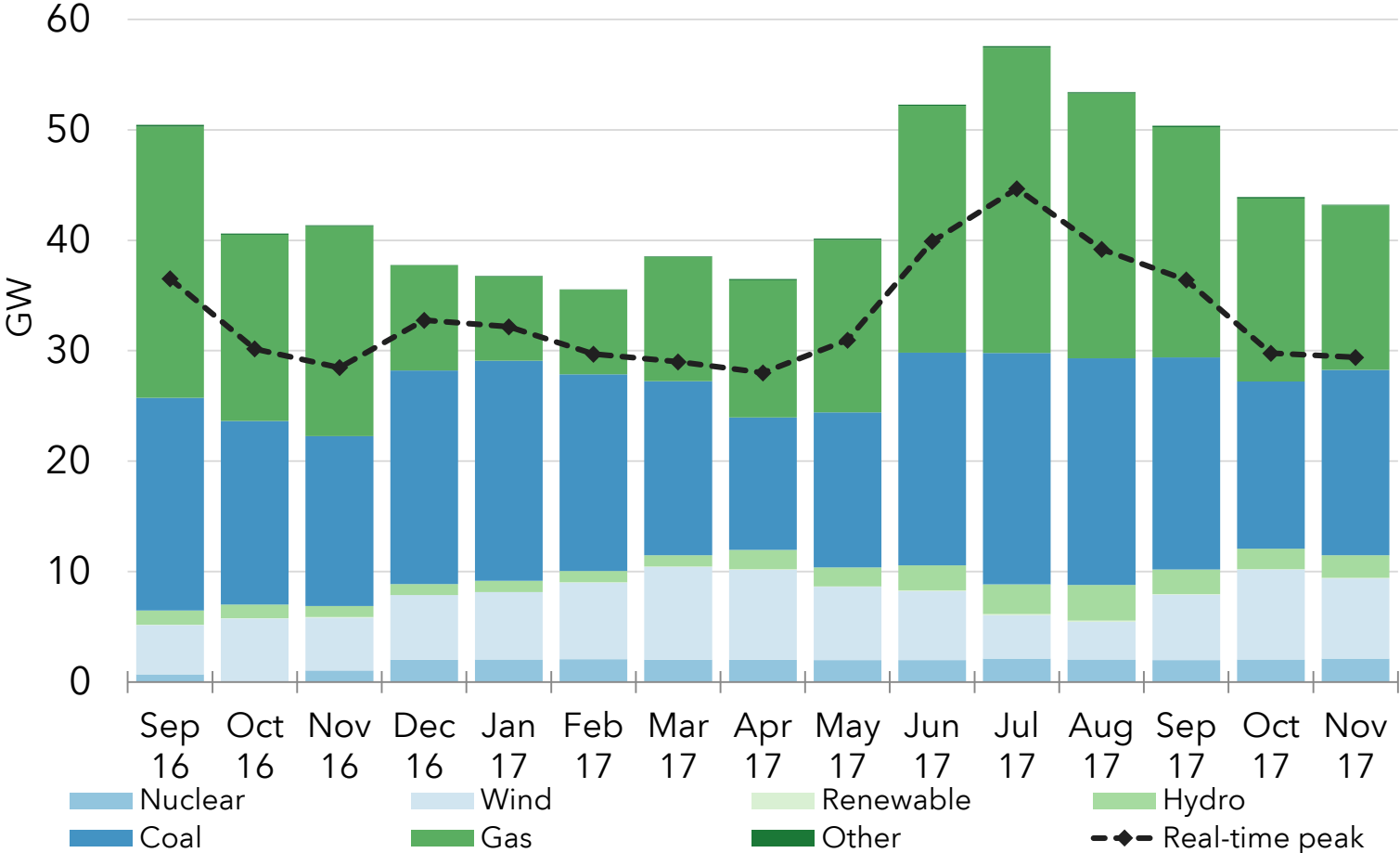
Wind capacity continues to grow



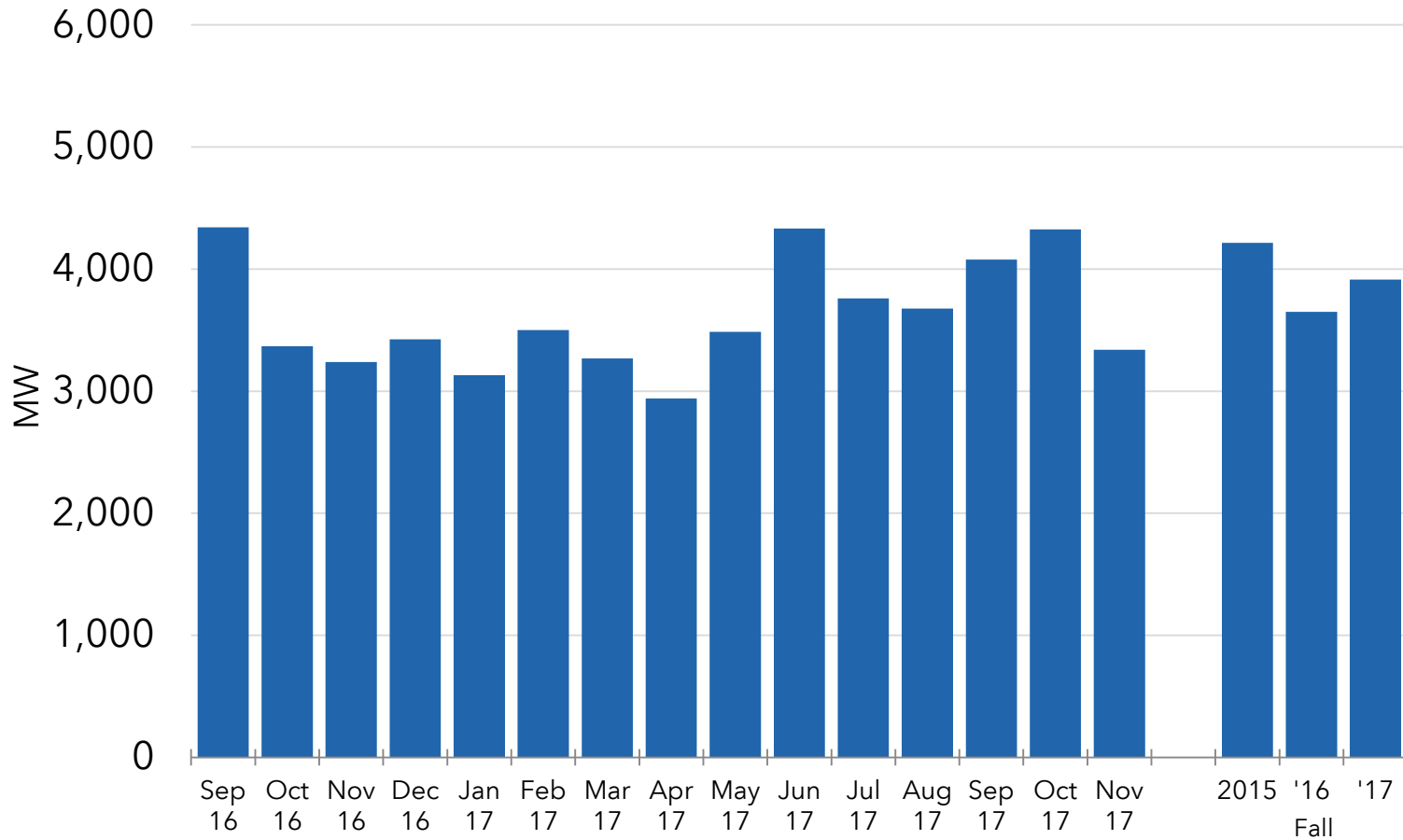
Load remains consistent



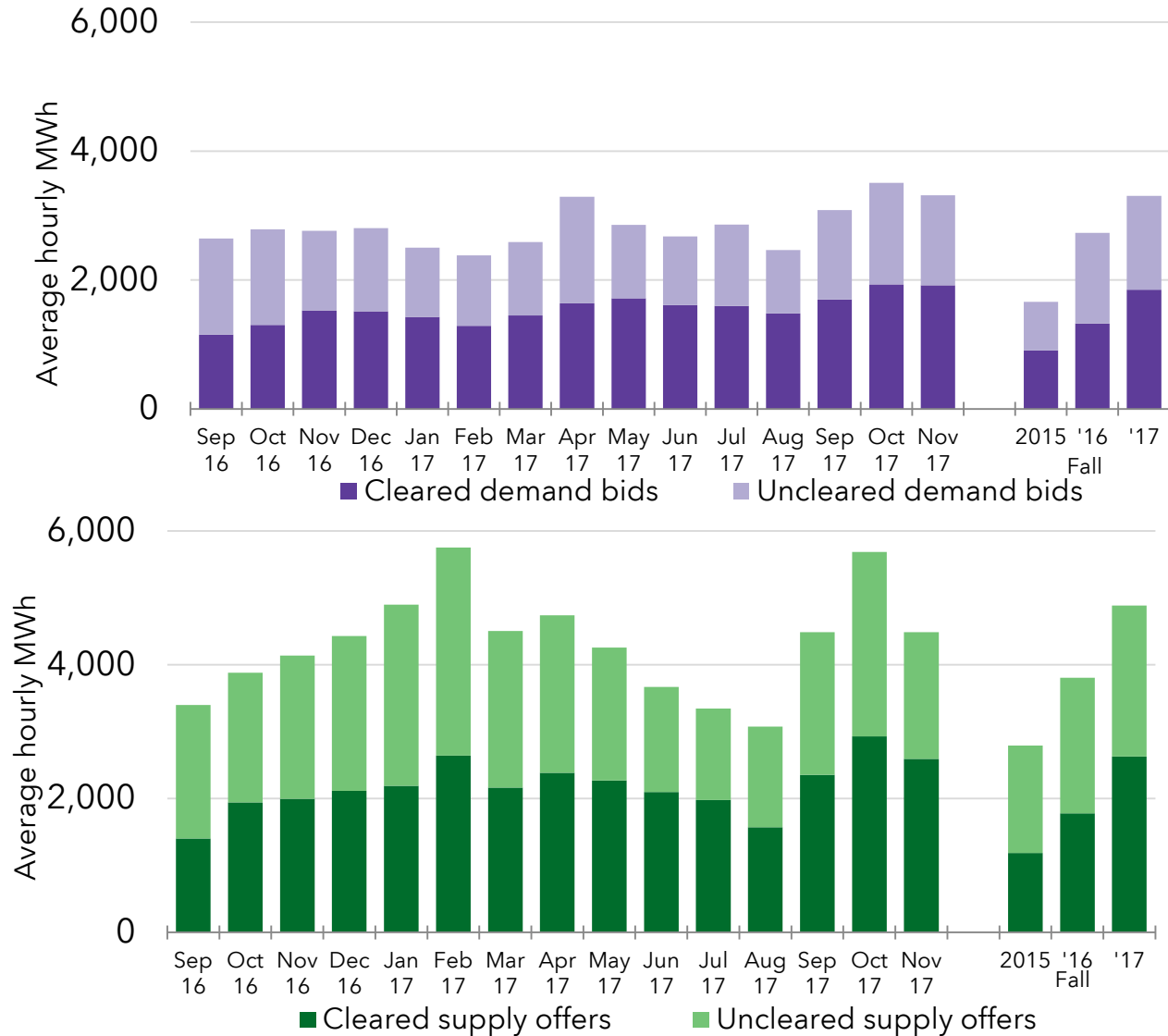
Coal and gas remain largest portion of unit commitment



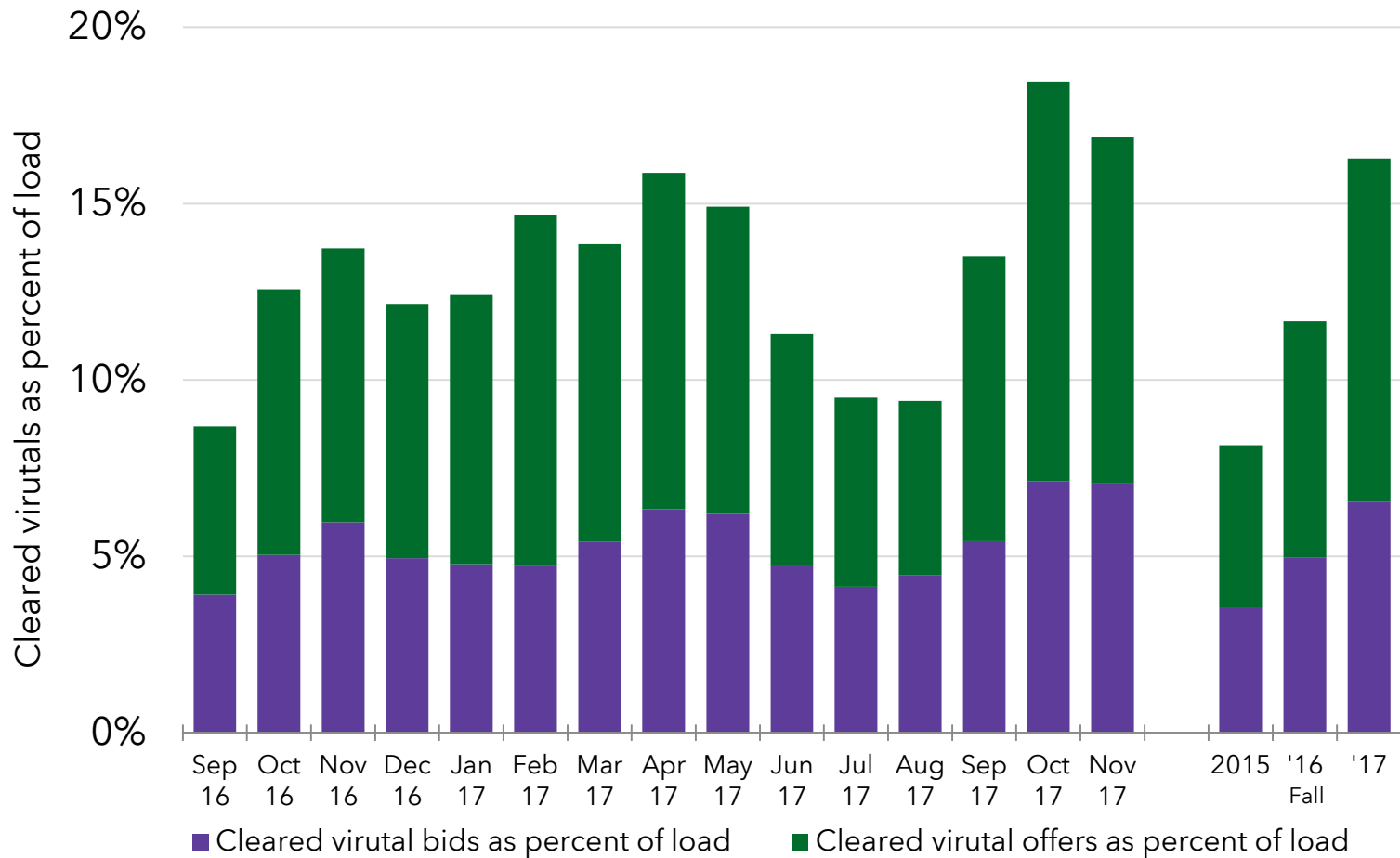
Offered capacity overage remains consistent



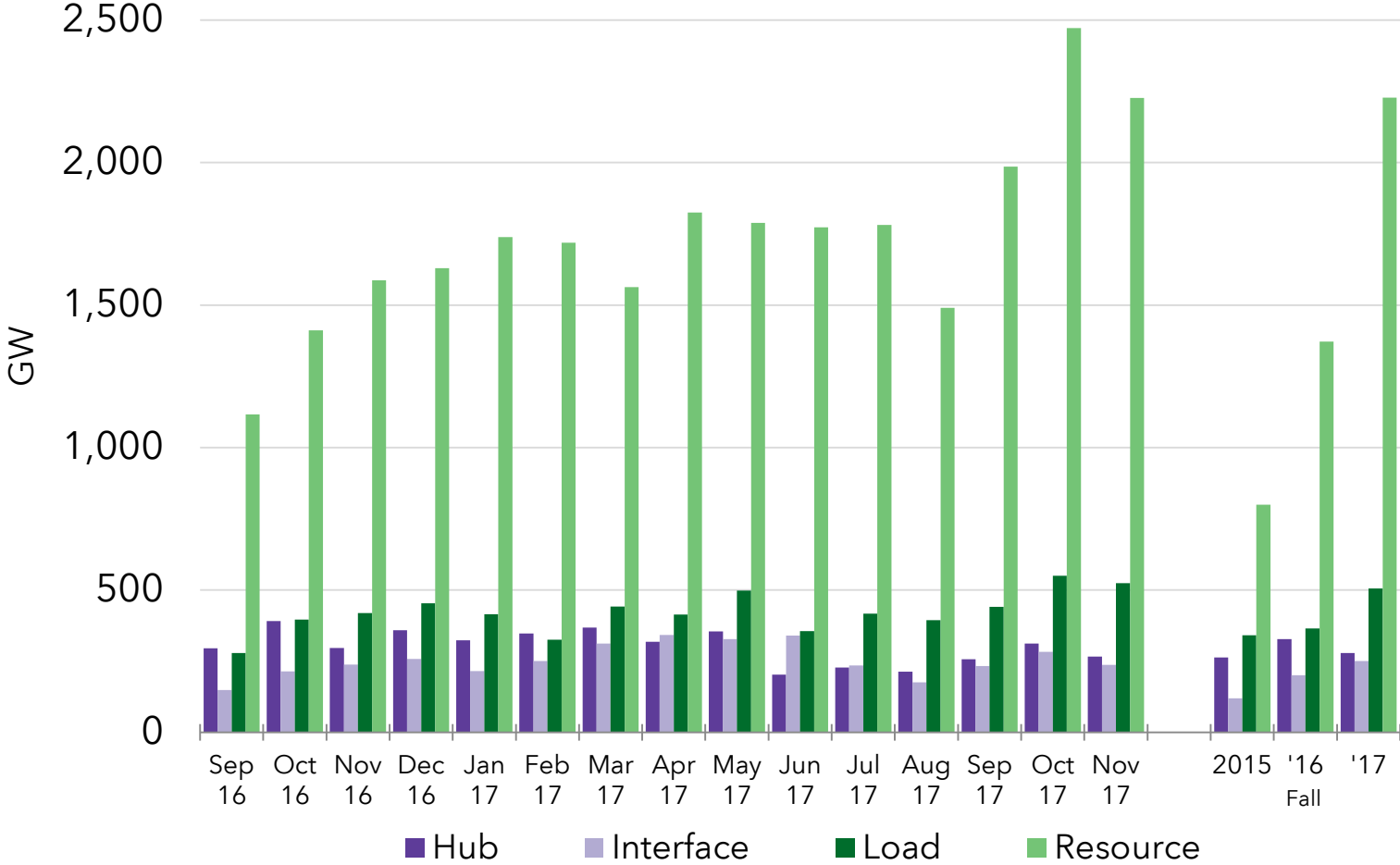
Virtual transactions continue to grow



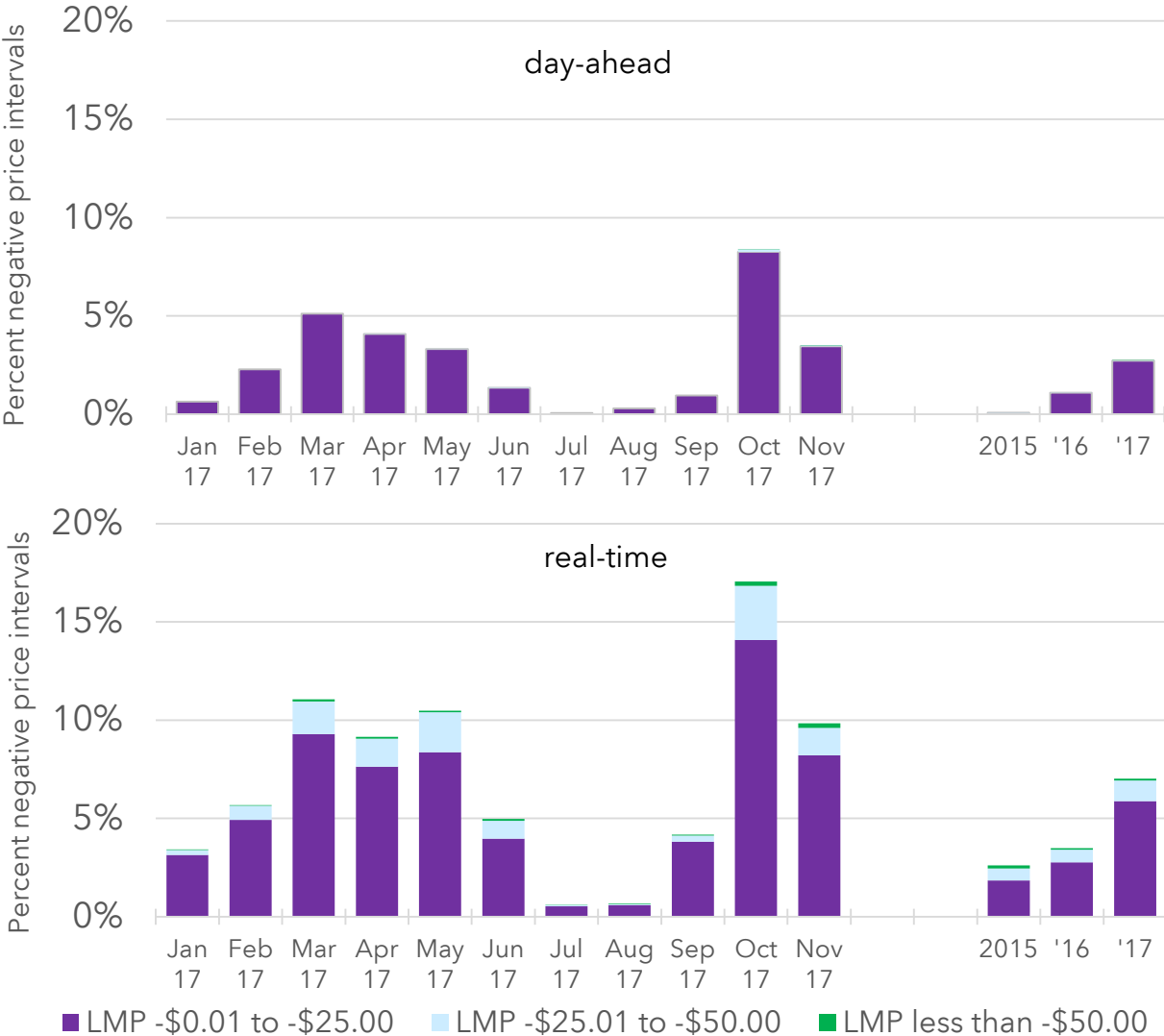
Virtual transactions compared to load increasing



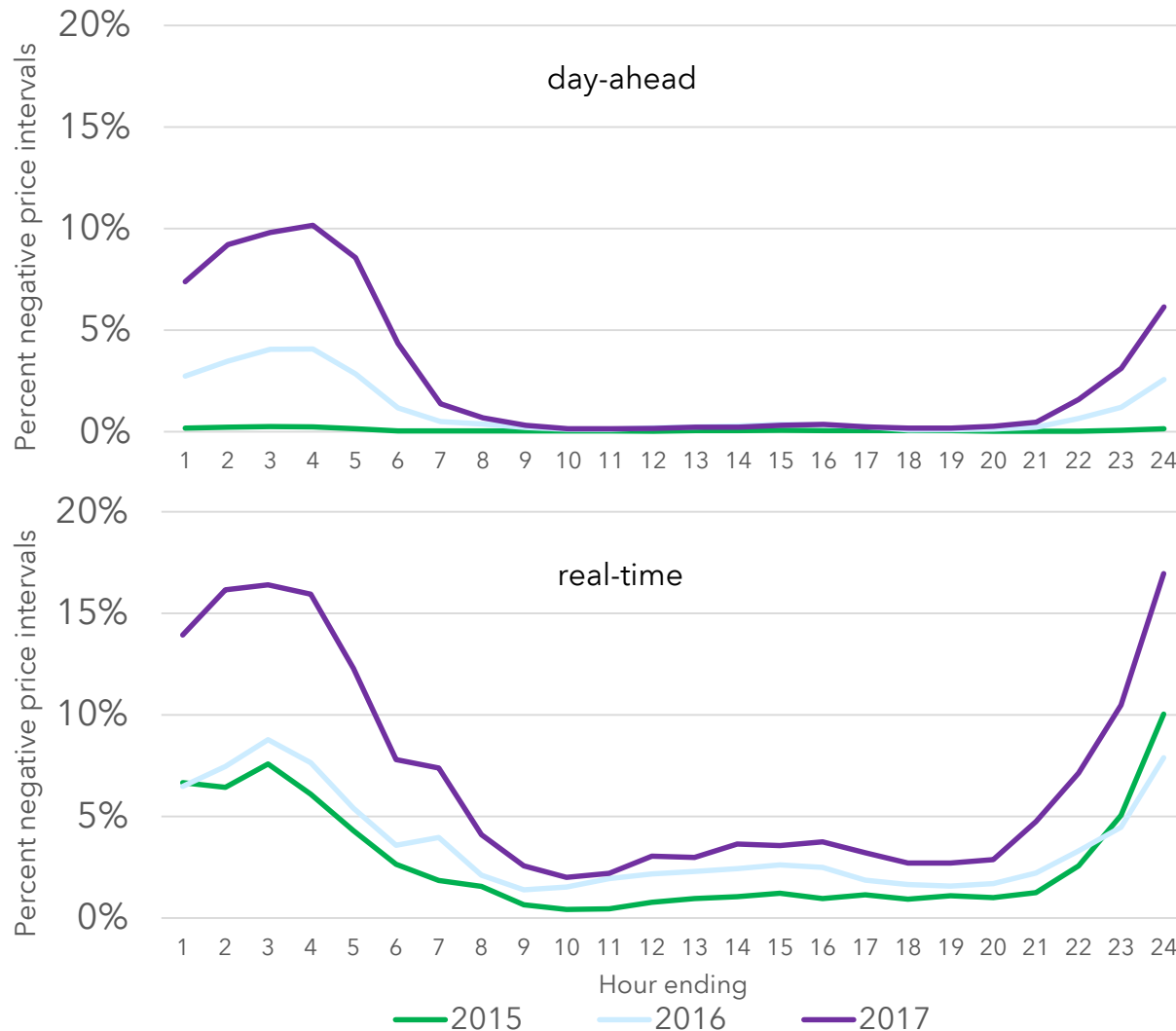
Most virtual transactions placed at resources



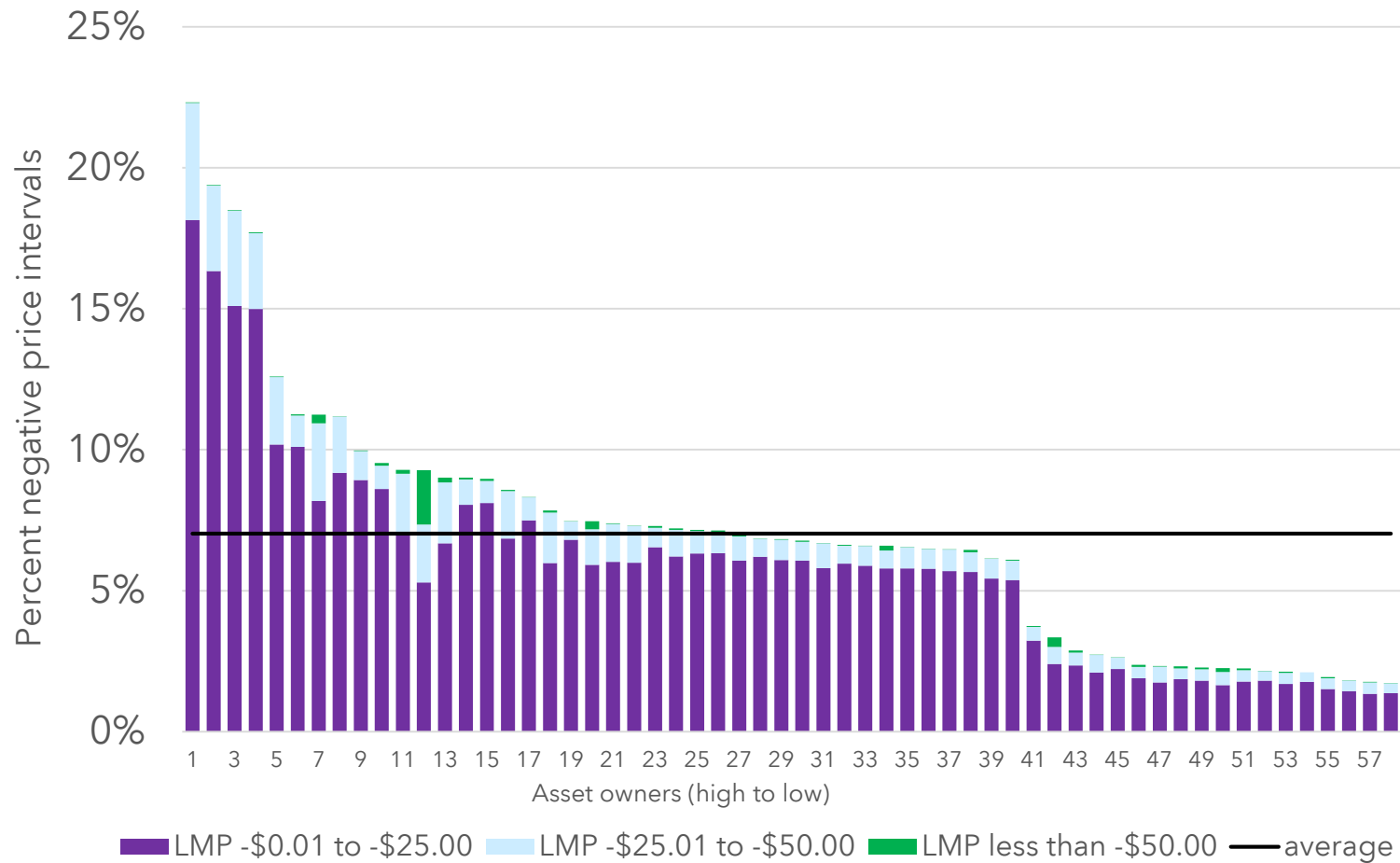
Frequency of negative prices is increasing



Most negative prices occur during off-peak hours



Frequency of negative prices differs by asset owner



Why be concerned about negative prices?

- Indicate surplus energy on the system
- Unit commitment differences

What needs to be addressed about negative prices?

- **Self-committing of resources in the day-ahead market**
- **Absence of wind in the day-ahead market that appears in real-time**

Summary

- Prices remained low
- High regulation-down
- Coal generation declined, while wind generation grew
- Virtual transactions continued to grow
- Issues with negative prices need to be addressed

Questions?