SPP Southwest Power Pool

MARKET MONITORING UNIT

SUMMER 2021

QUARTERLY REPORT

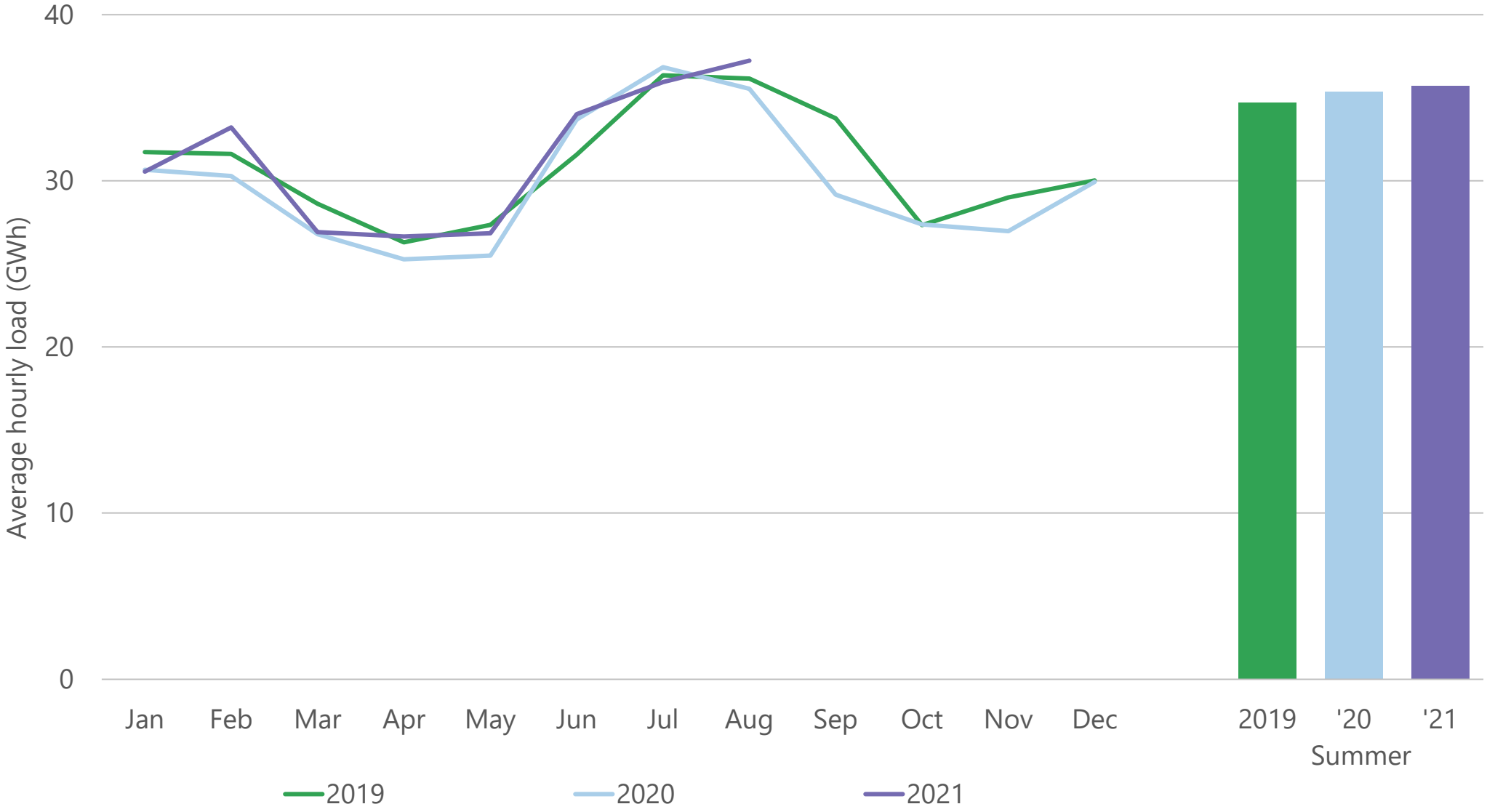
Helping our members work together to keep the lights on... today and in the future.

SouthwestPowerPool SPPorg southwest-power-pool

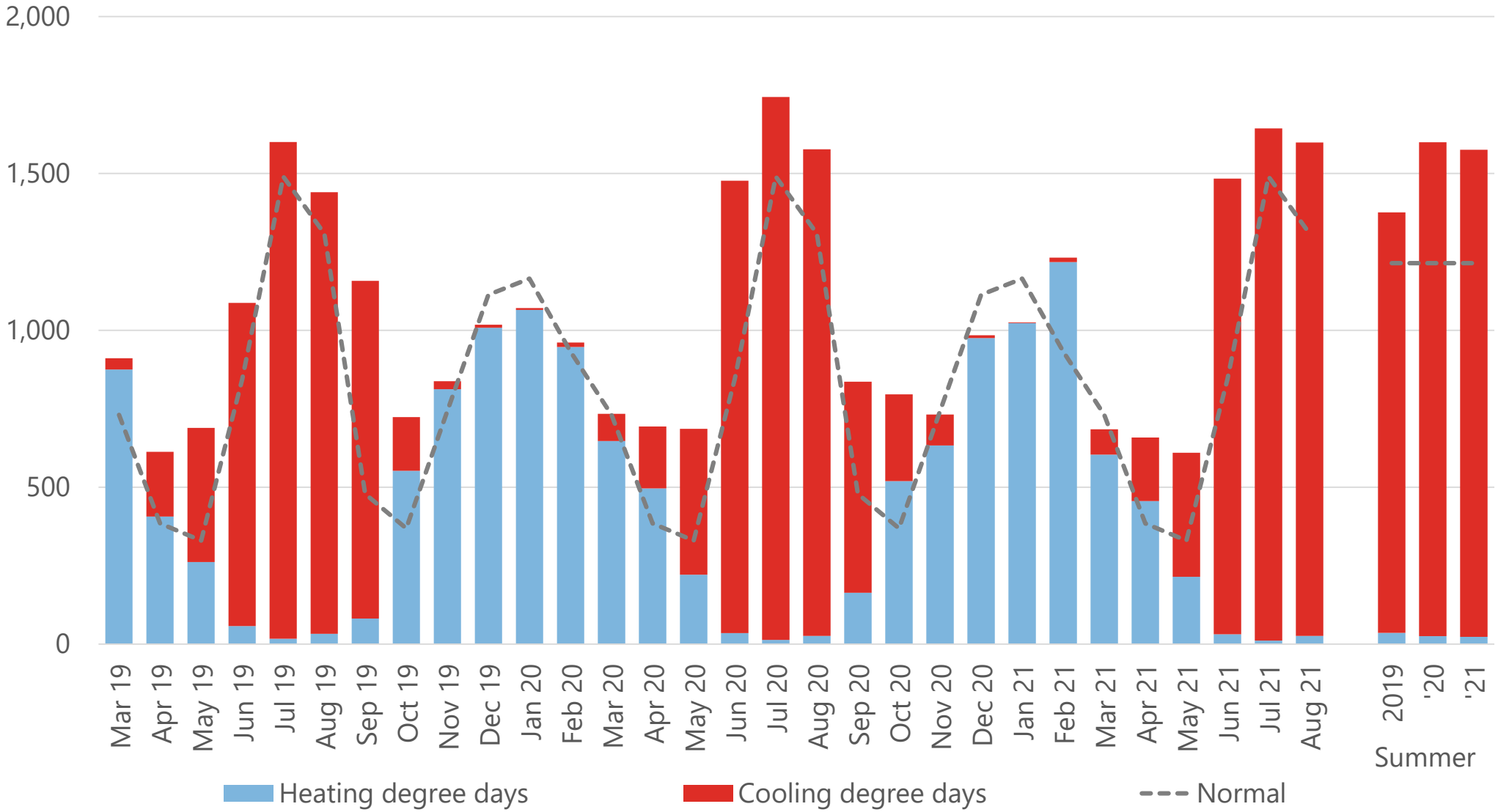
SUMMER 2021 HIGHLIGHTS

- Coal generation supplied 42 percent of total generation for summer 2021; wind supplied 24 percent of total generation.
- Gas price increased by 108% from $1.65/MMBtu in summer 2020 to $3.42/MMBtu in summer 2021. (August $3.77/MMBtu)
- Electricity prices also increased from summer 2020 to summer 2021. Day-ahead prices increased from an average of $20.32/MWh in summer 2020 to $33.30/MWh in 2021, an increase of 64 percent. Real-time prices increased from an average of $19.69/MWh in summer 2020 to $30.68/MWh in 2021, an increase of 56 percent.
- The special issues section looks at the conversion of non-dispatchable variable energy resources to dispatchable variable energy resources.

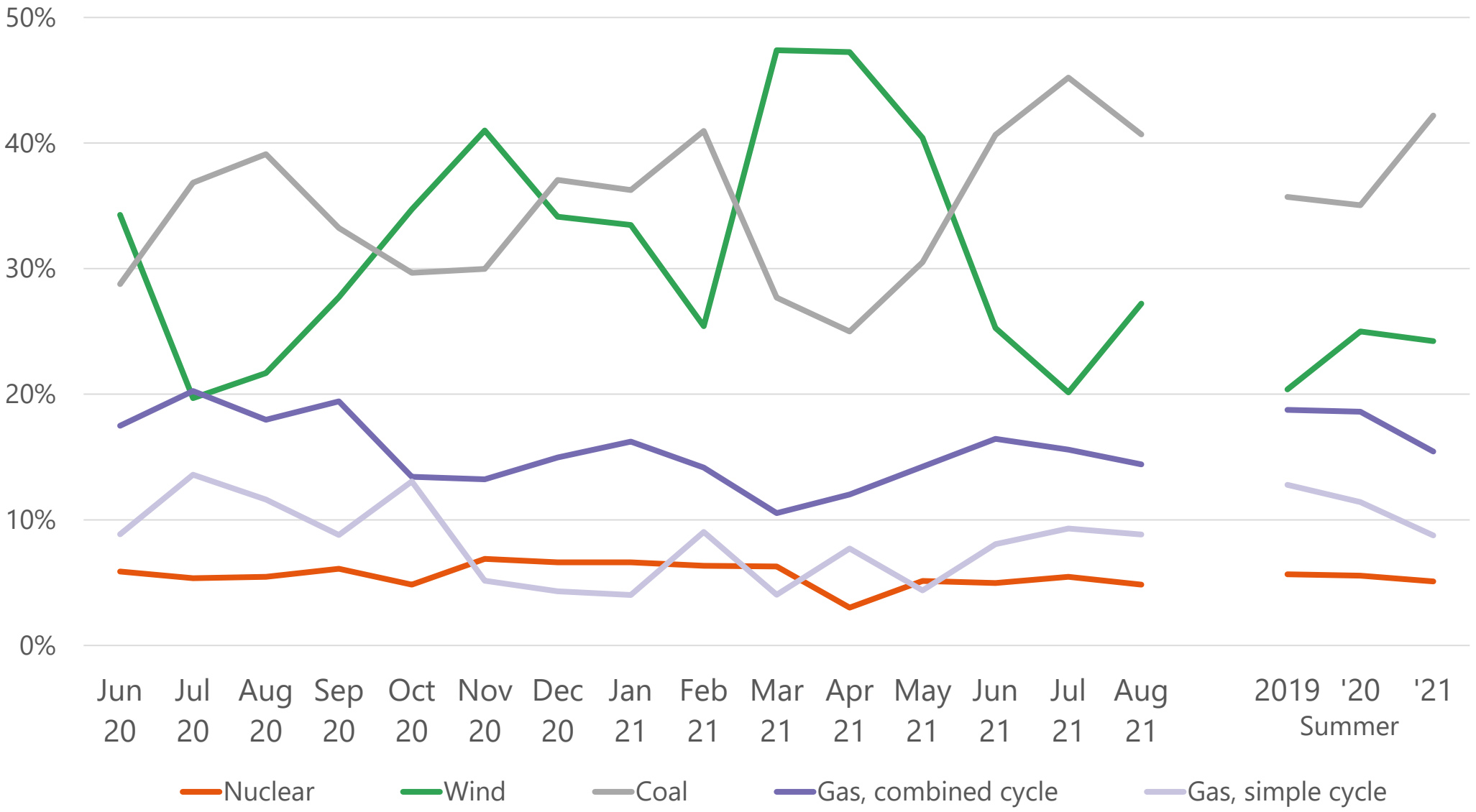
OVERALL LOAD UP SLIGHTLY



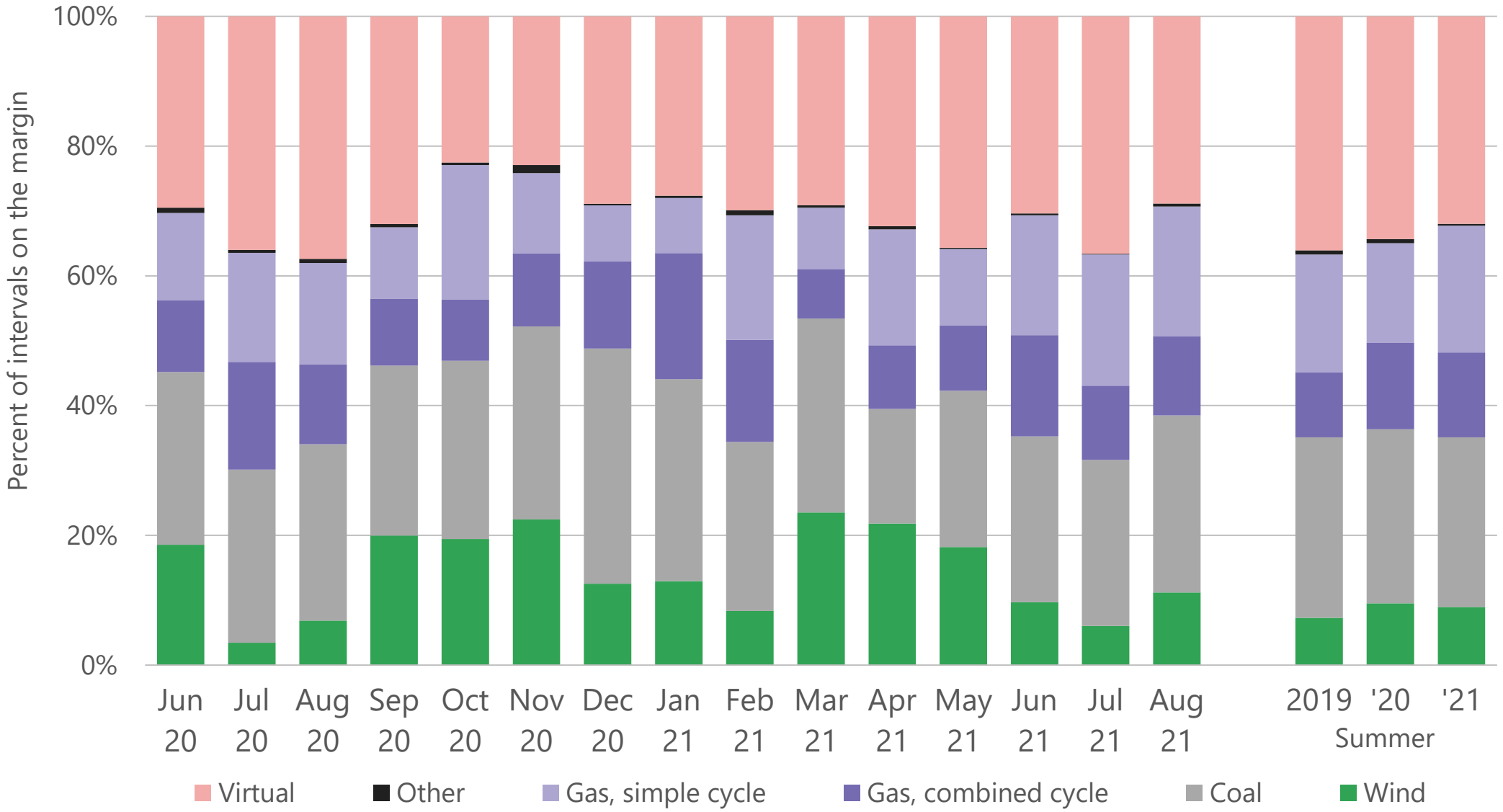
LOWER DEGREE DAY IMPACT IN SUMMER 2021



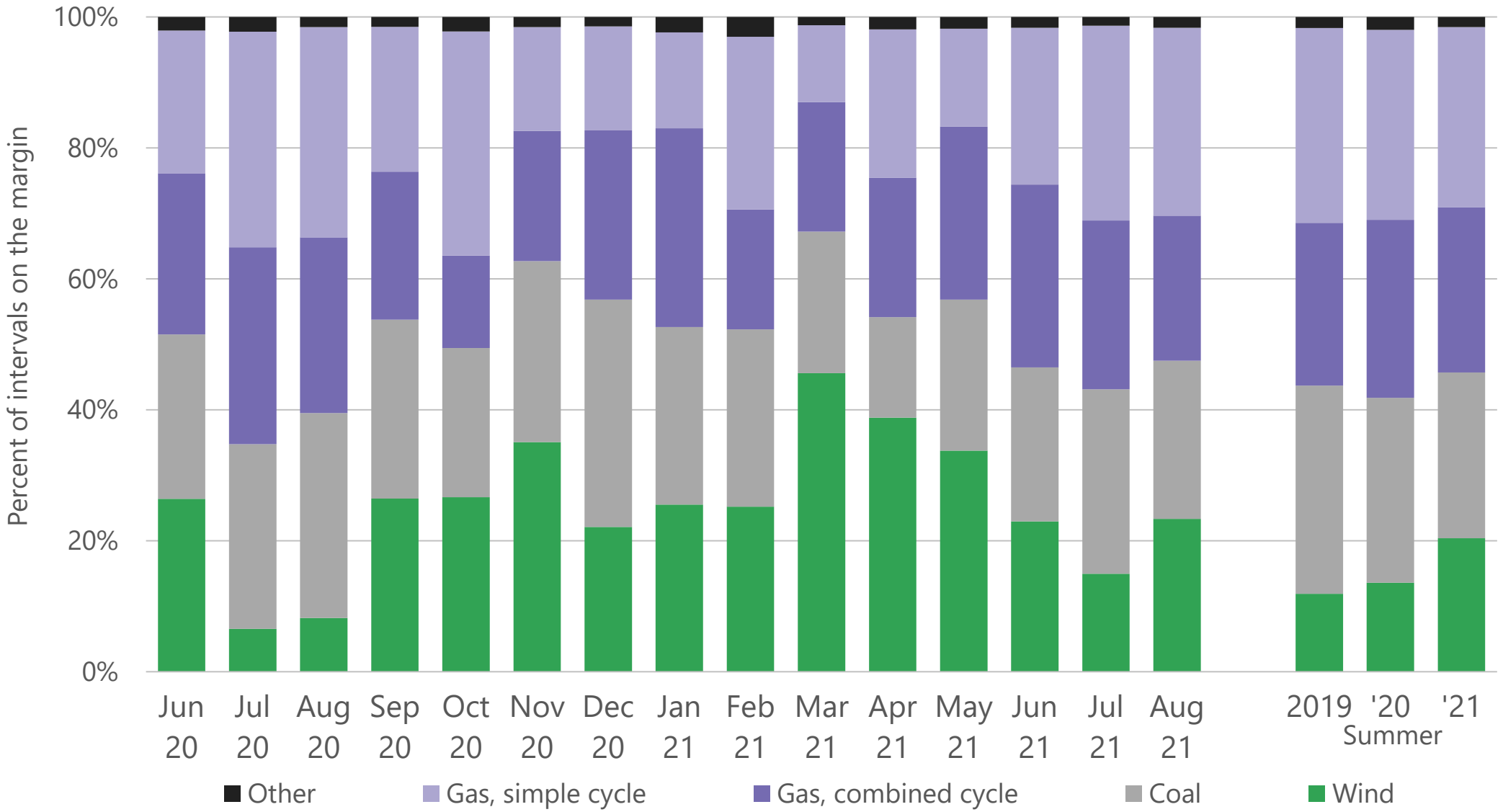
COAL HAD HIGHEST GENERATION BY FUEL TYPE



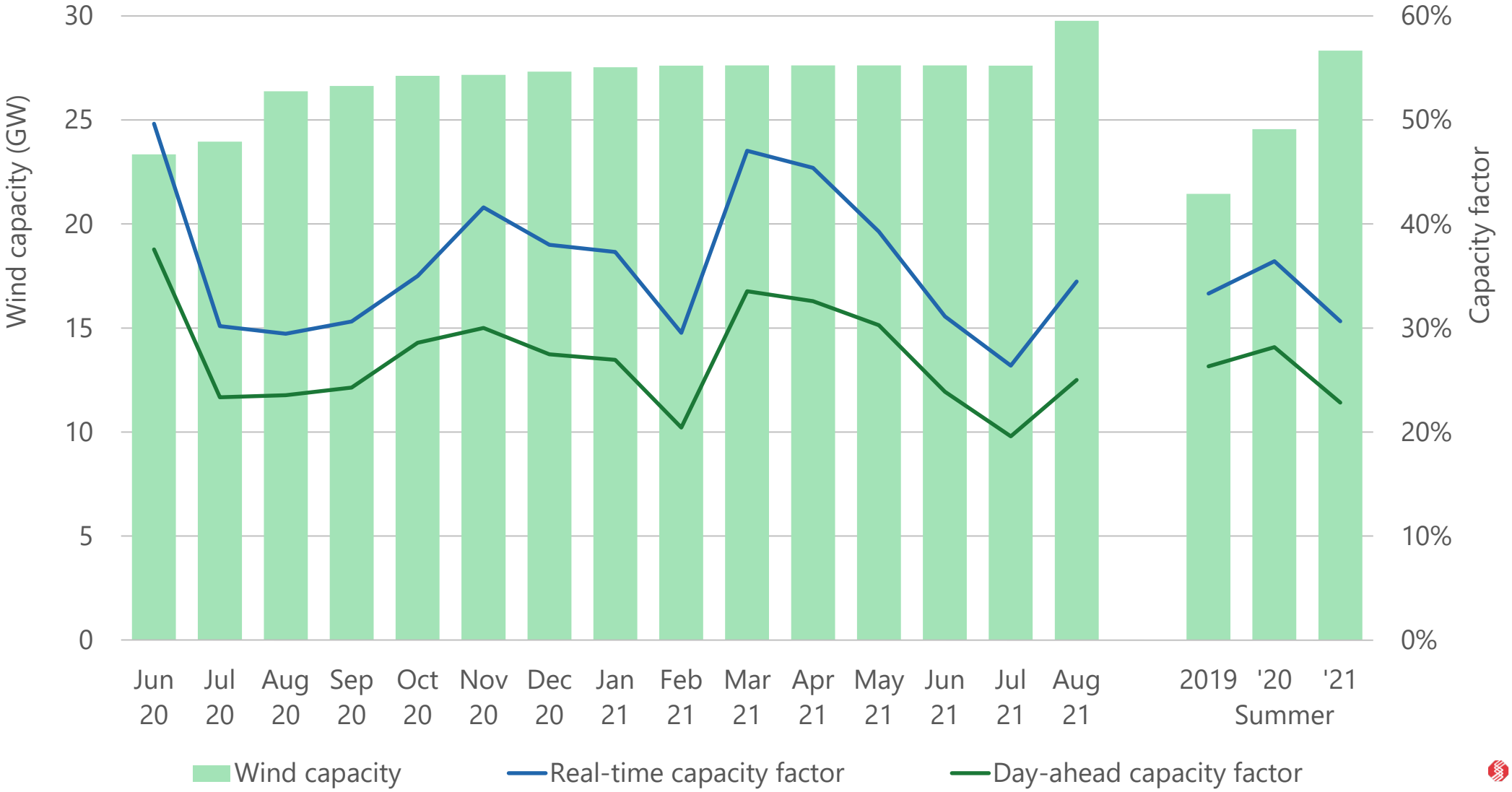
VIRTUALS SET PRICES MOST FREQUENTLY IN DAY-AHEAD



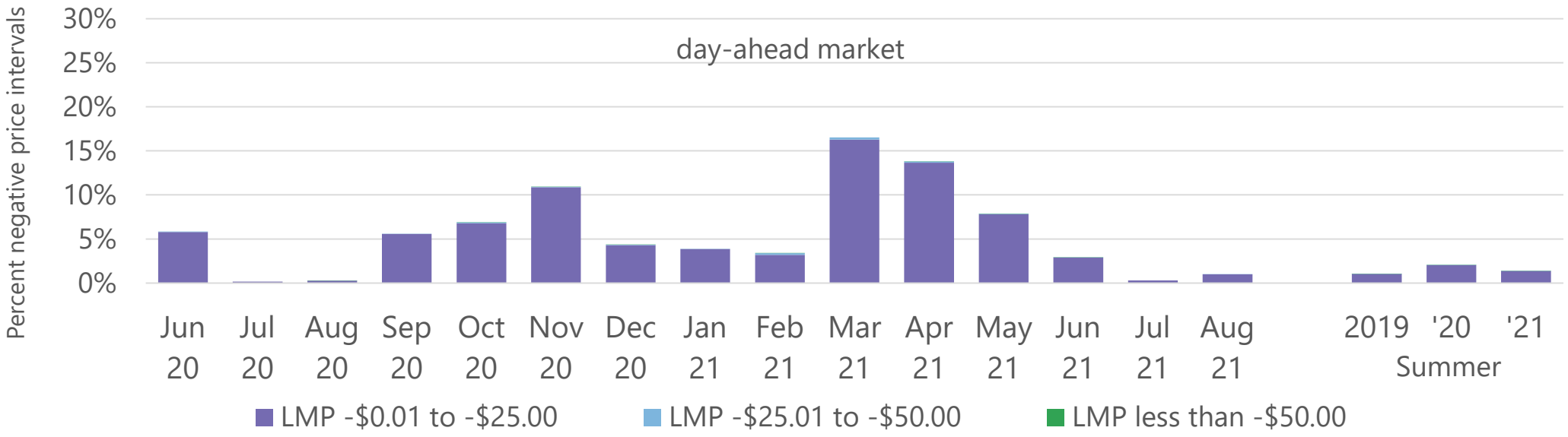
PRICES SET MOST BY SIMPLE-CYCLE IN REAL-TIME

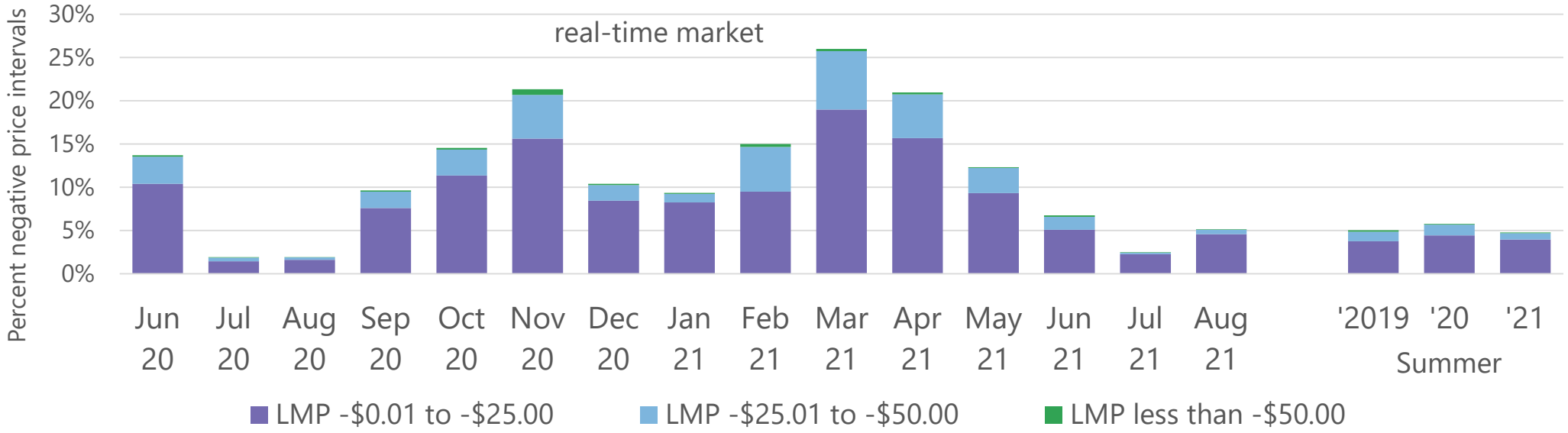


WIND CAPACITY GROWTH JUMPED, CAPACITY FACTOR DOWN

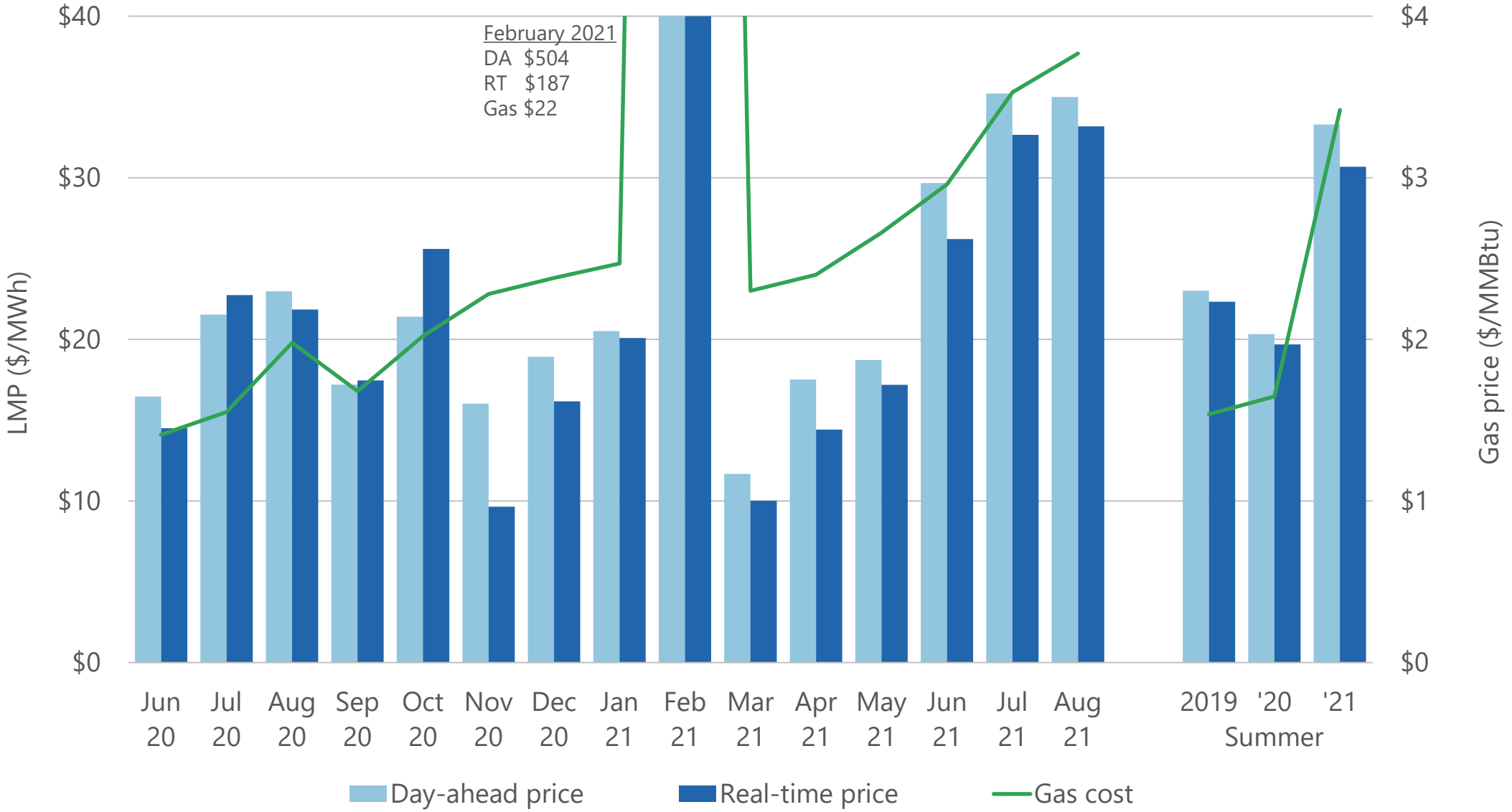


NEGATIVE PRICE INTERVALS DECLINED SLIGHTLY



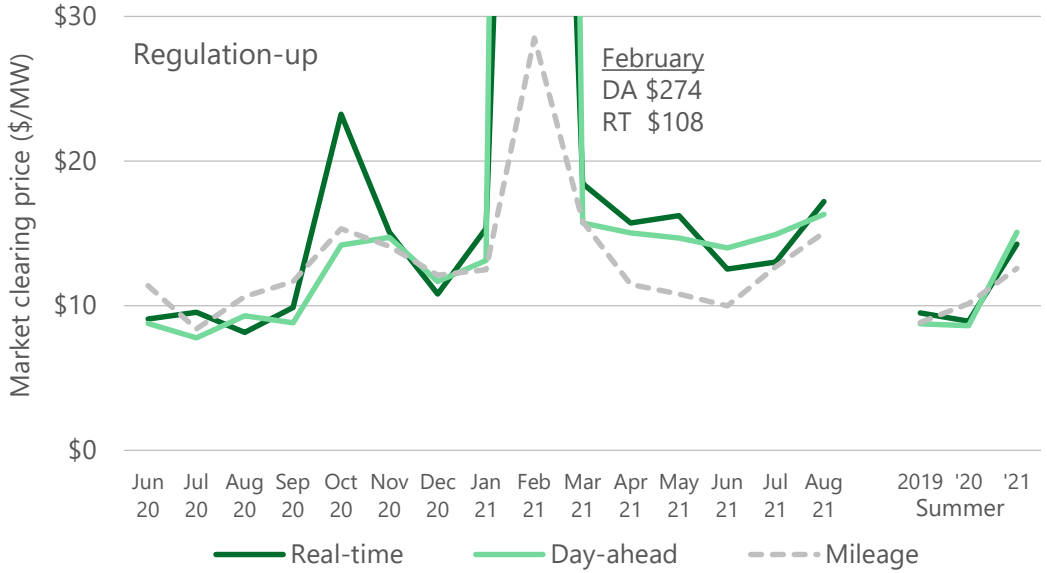


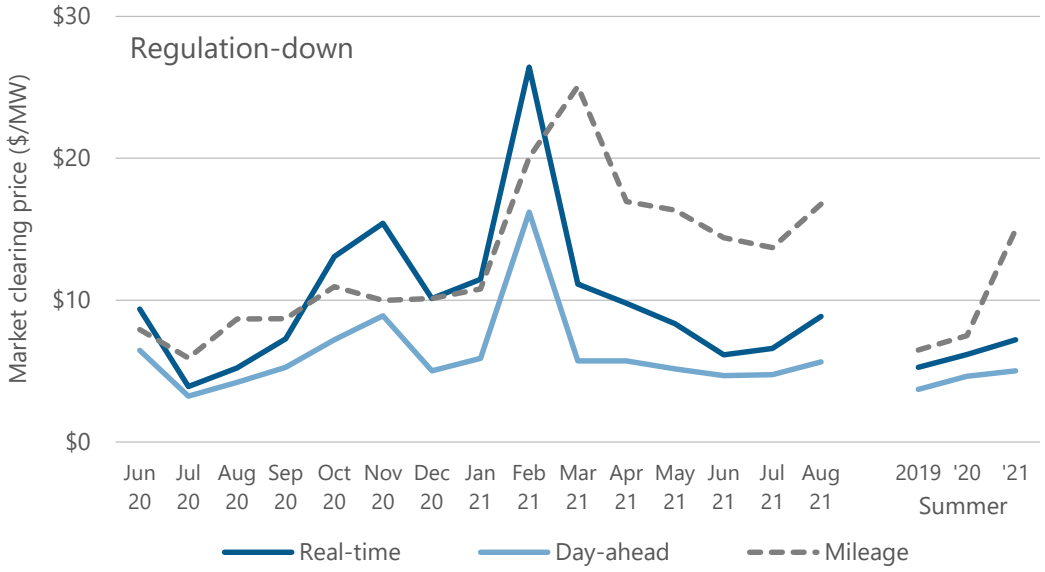
ELECTRICITY AND GAS INCREASED

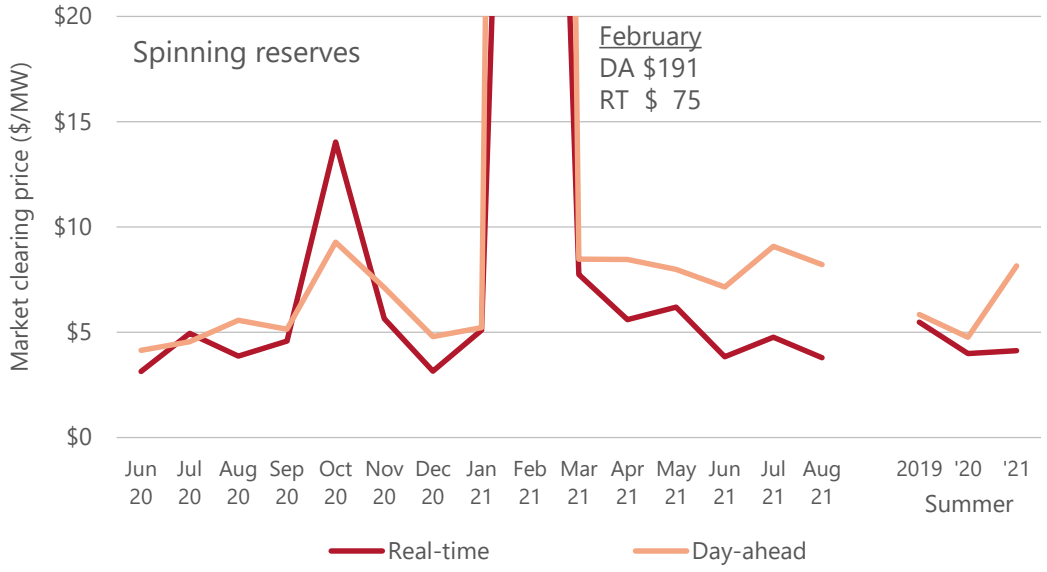


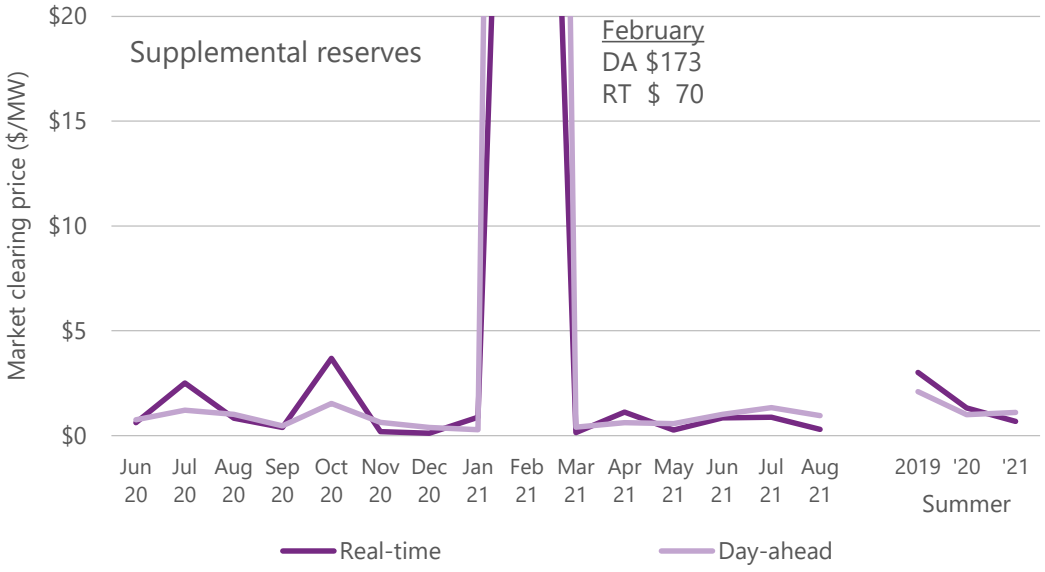
SPREAD BETWEEN ON-PEAK AND OFF-PEAK PRICES INCREASED

REGULATION-UP, -DOWN, AND SPIN CLIMBED

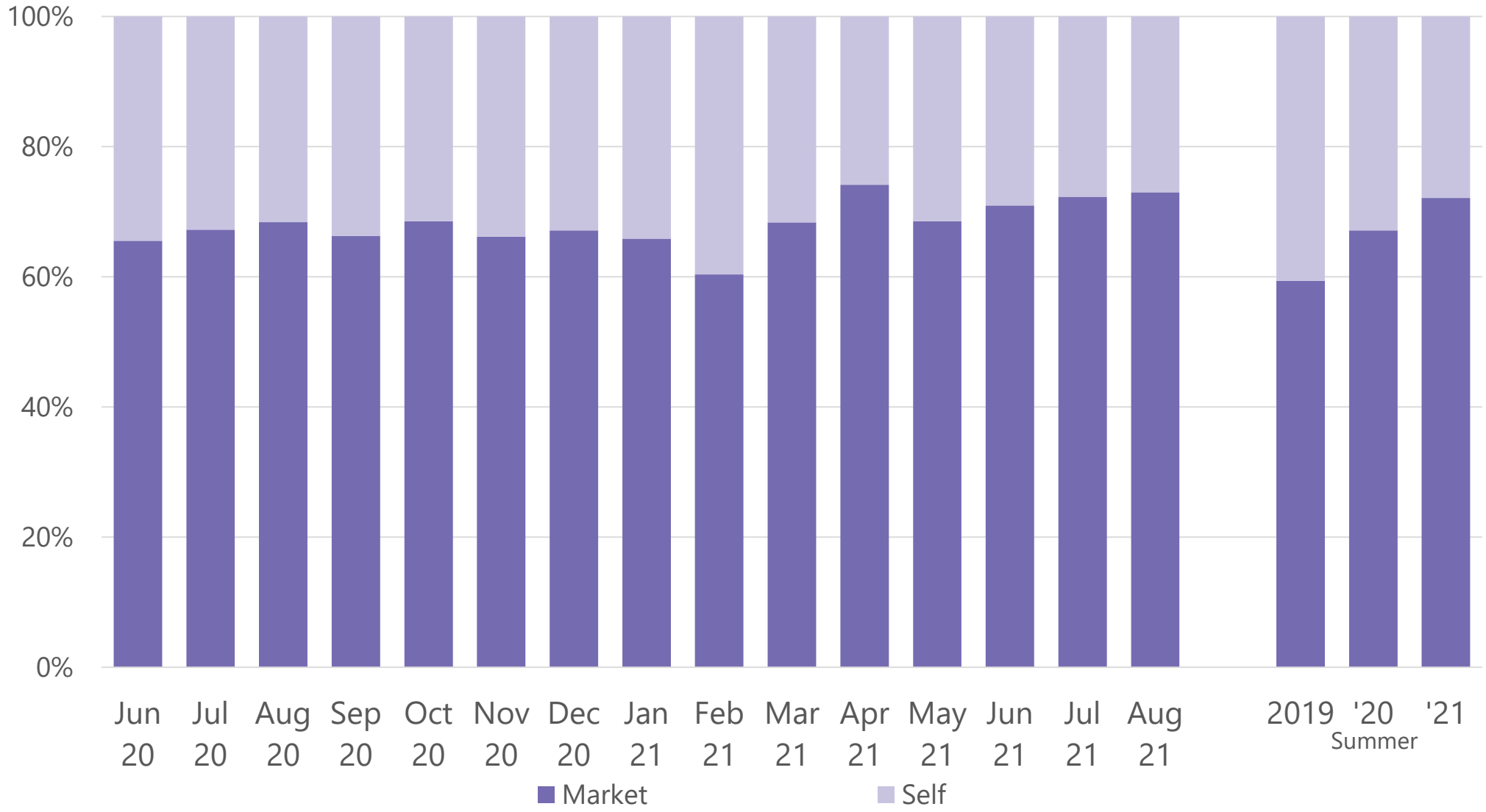




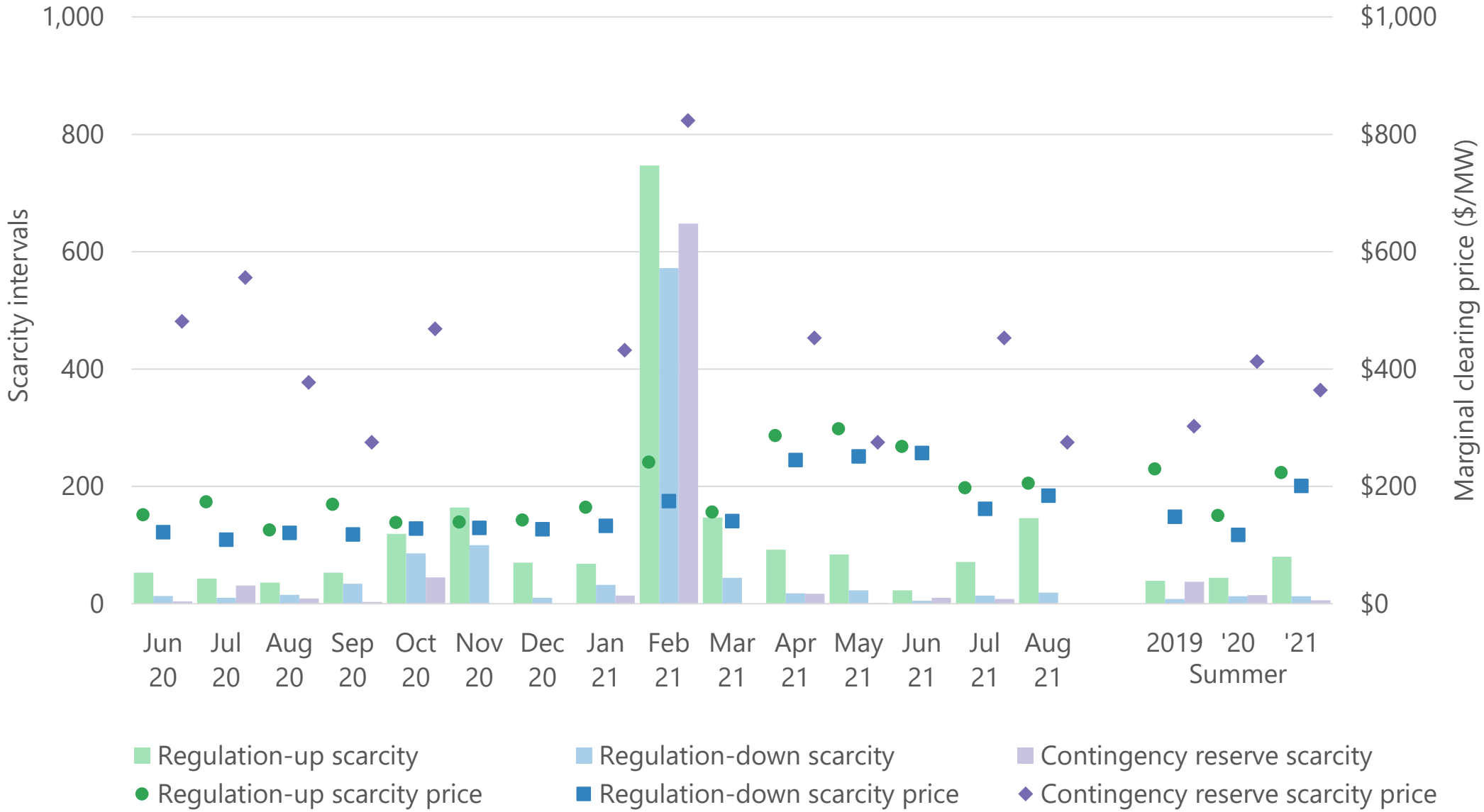




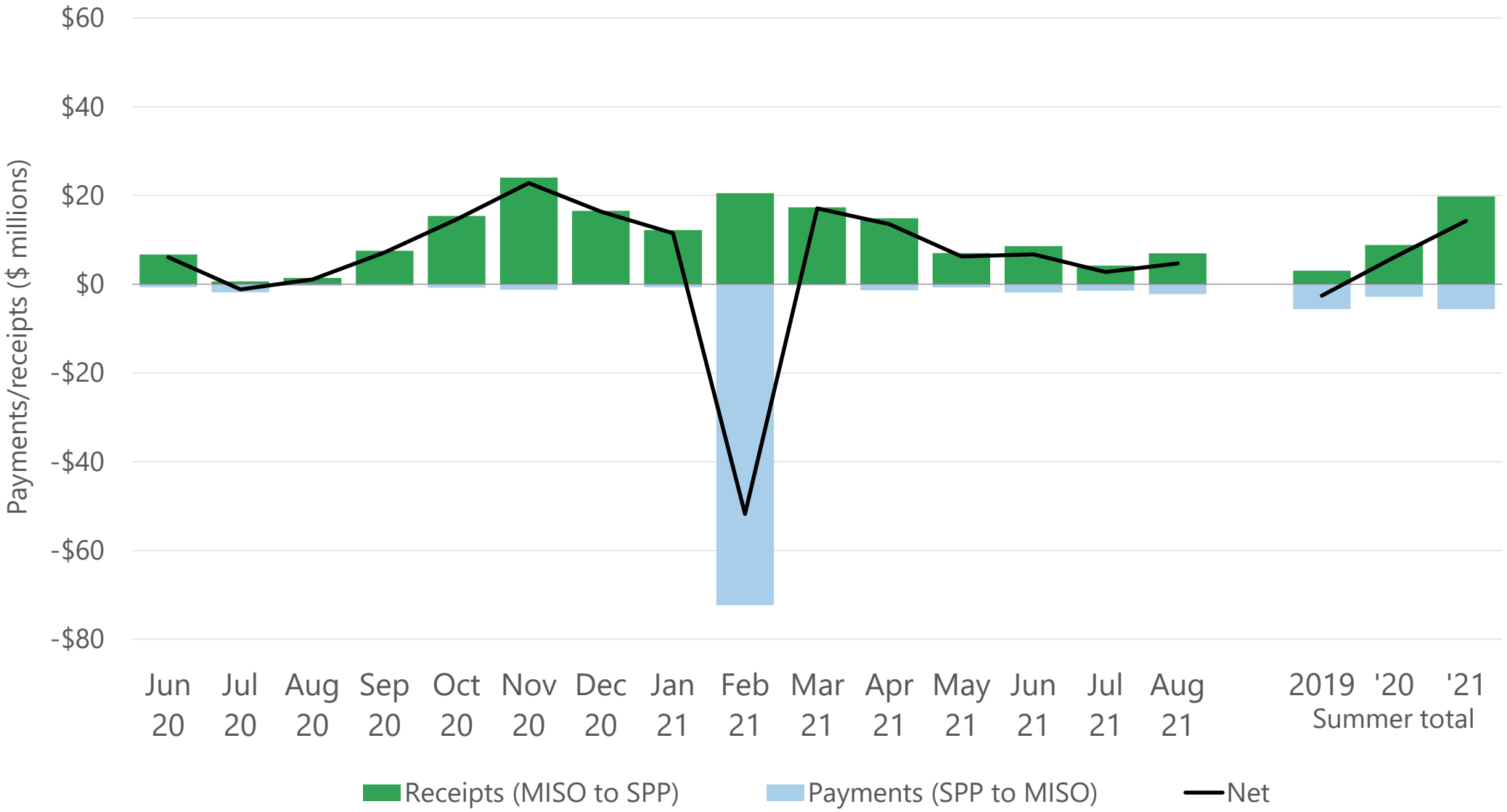
MARKET DISPATCH CONTINUES TO INCREASE



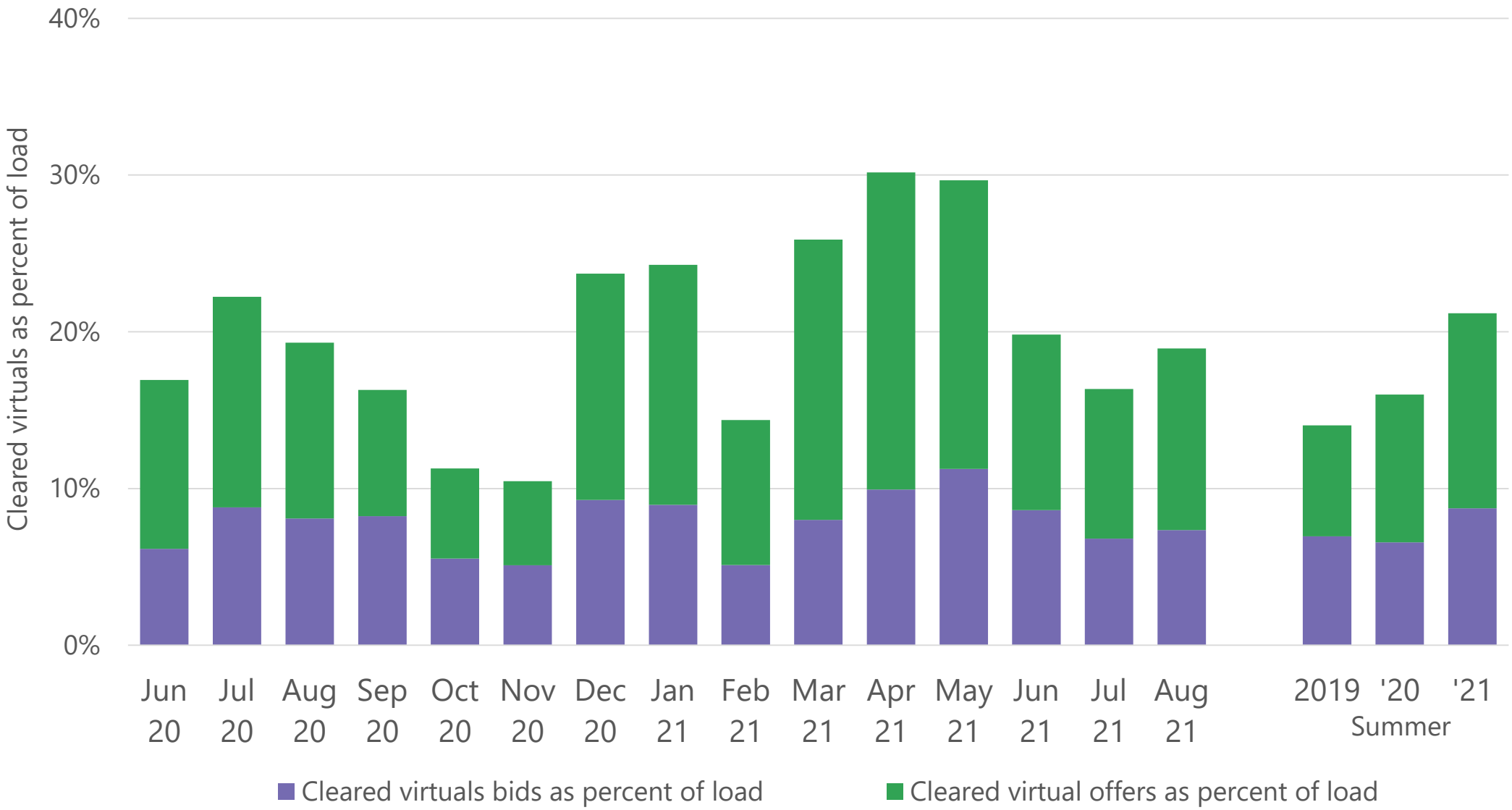
REGULATION-UP SCARCITY INCREASED



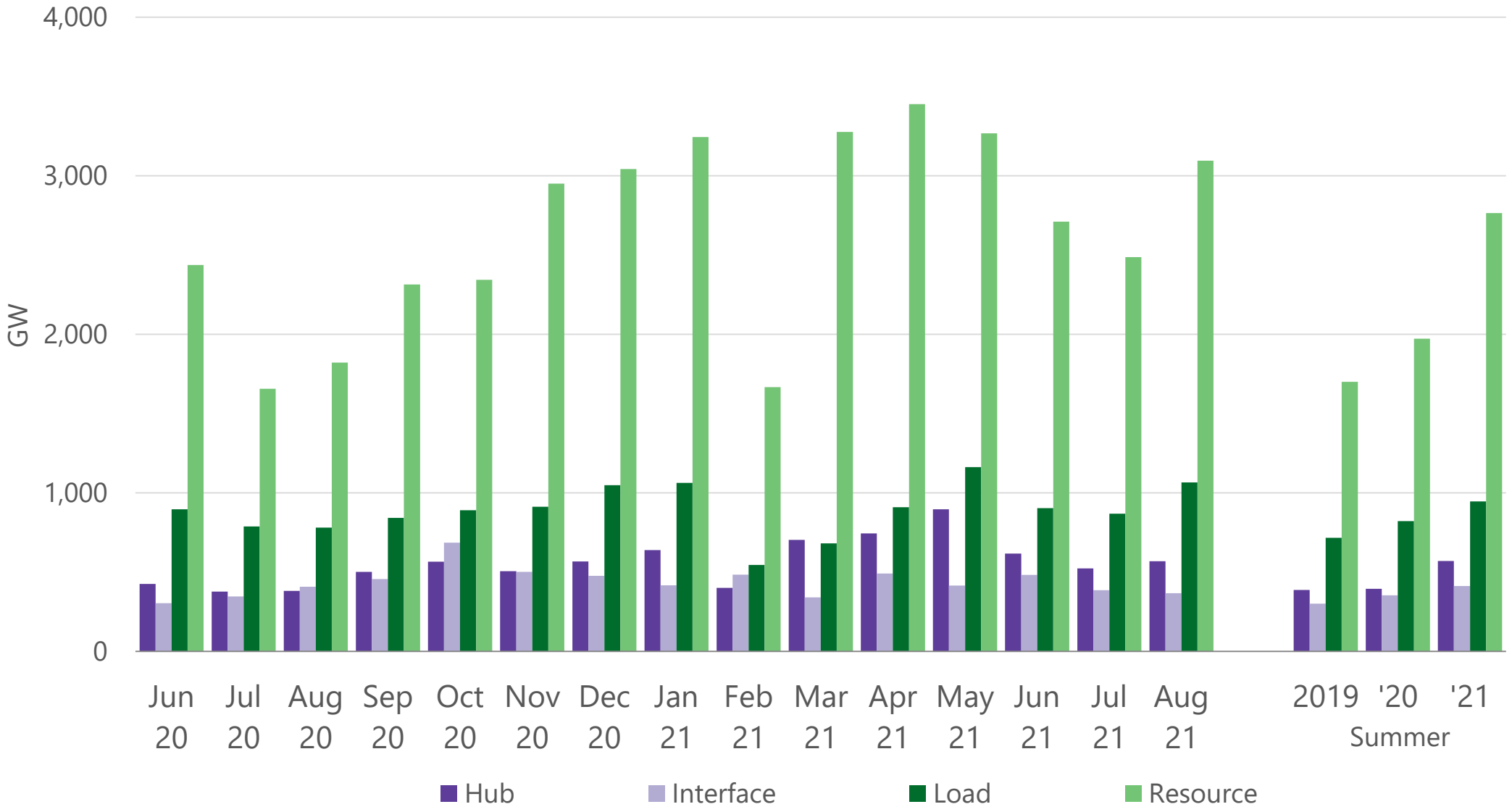
MARKET-TO-MARKET PAYMENTS CLIMBED



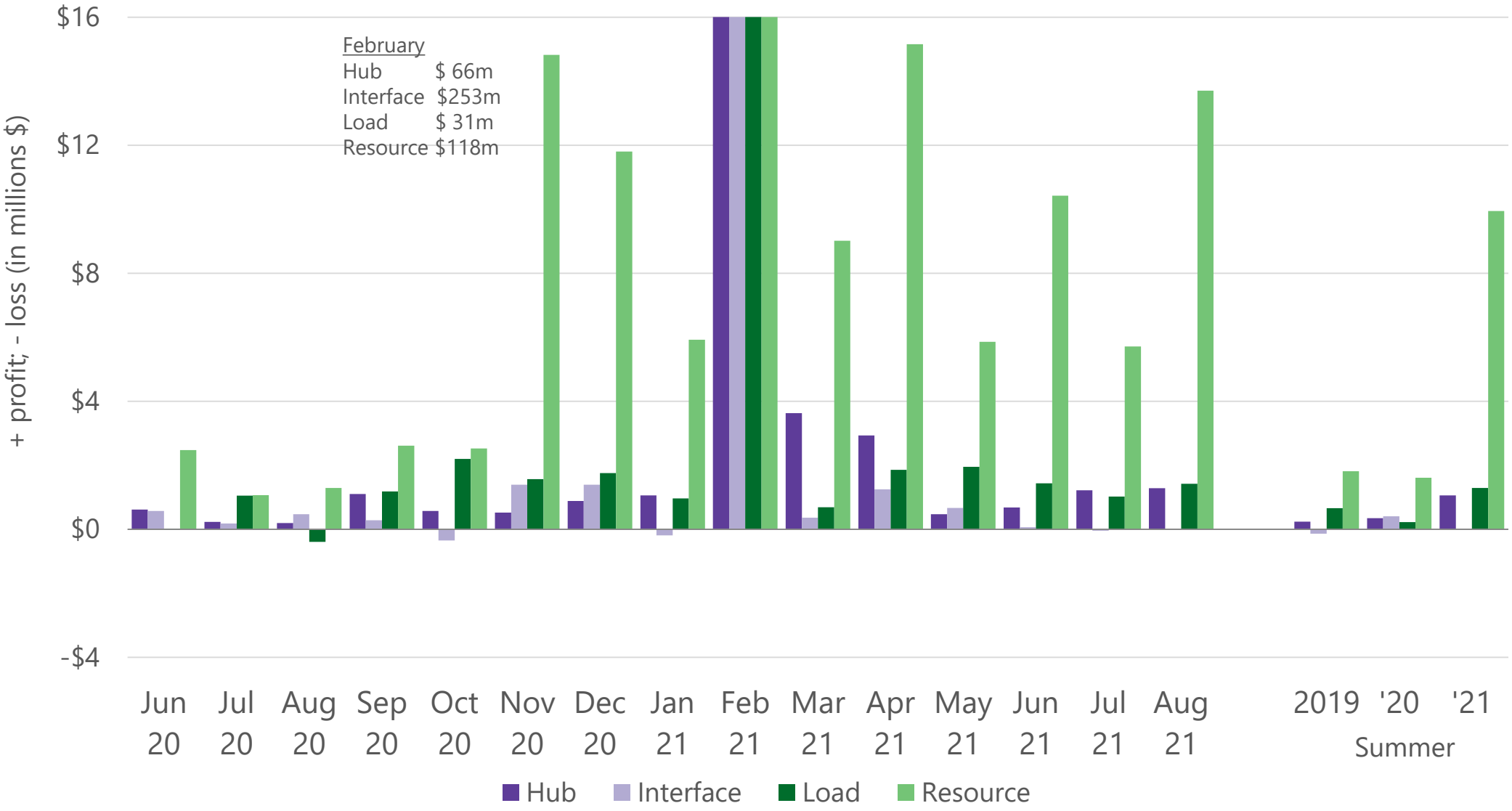
VIRTUAL TRANSACTIONS CONTINUED TO GROW



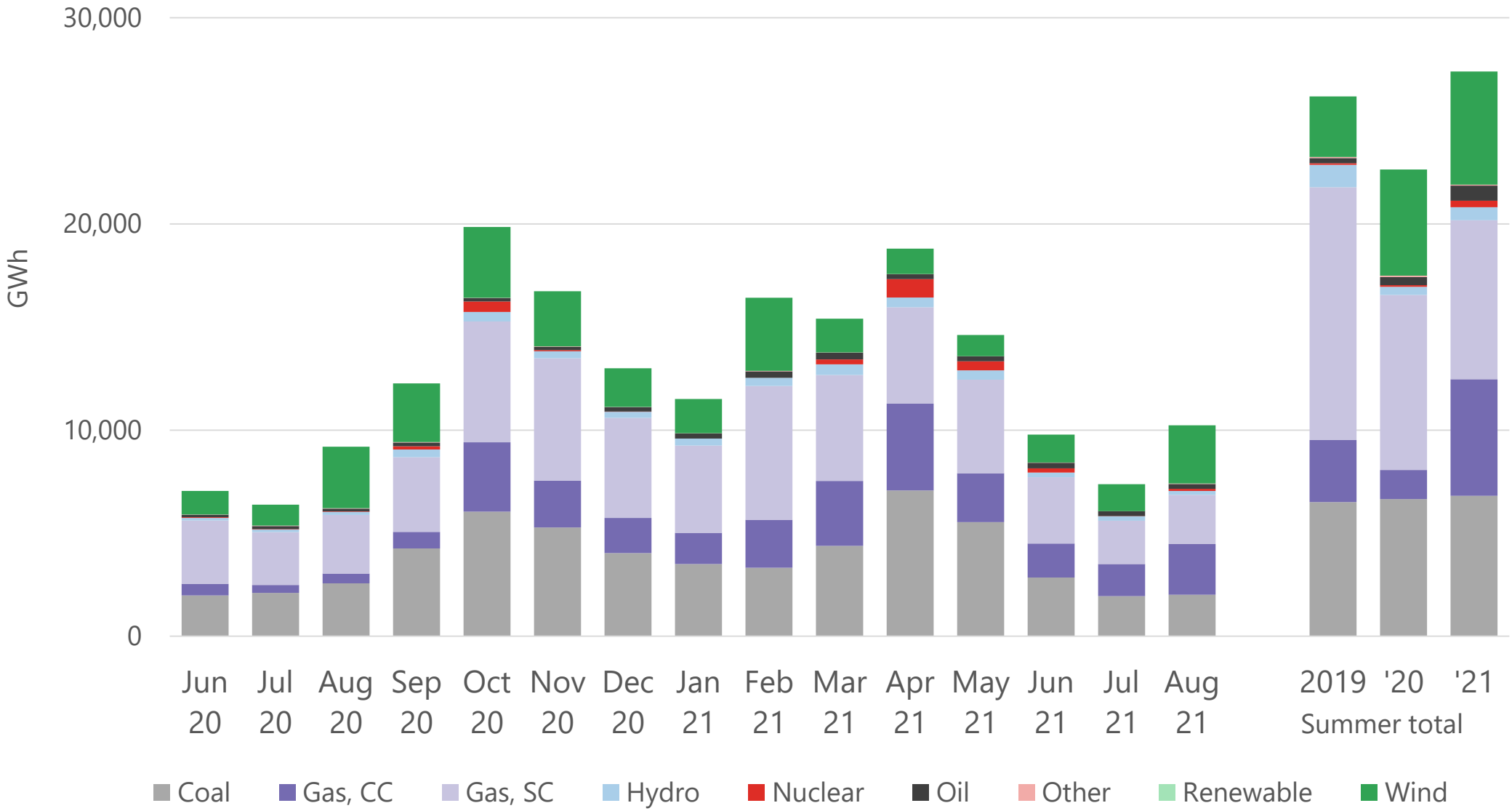
MOST VIRTUALS AT RESOURCE LOCATIONS



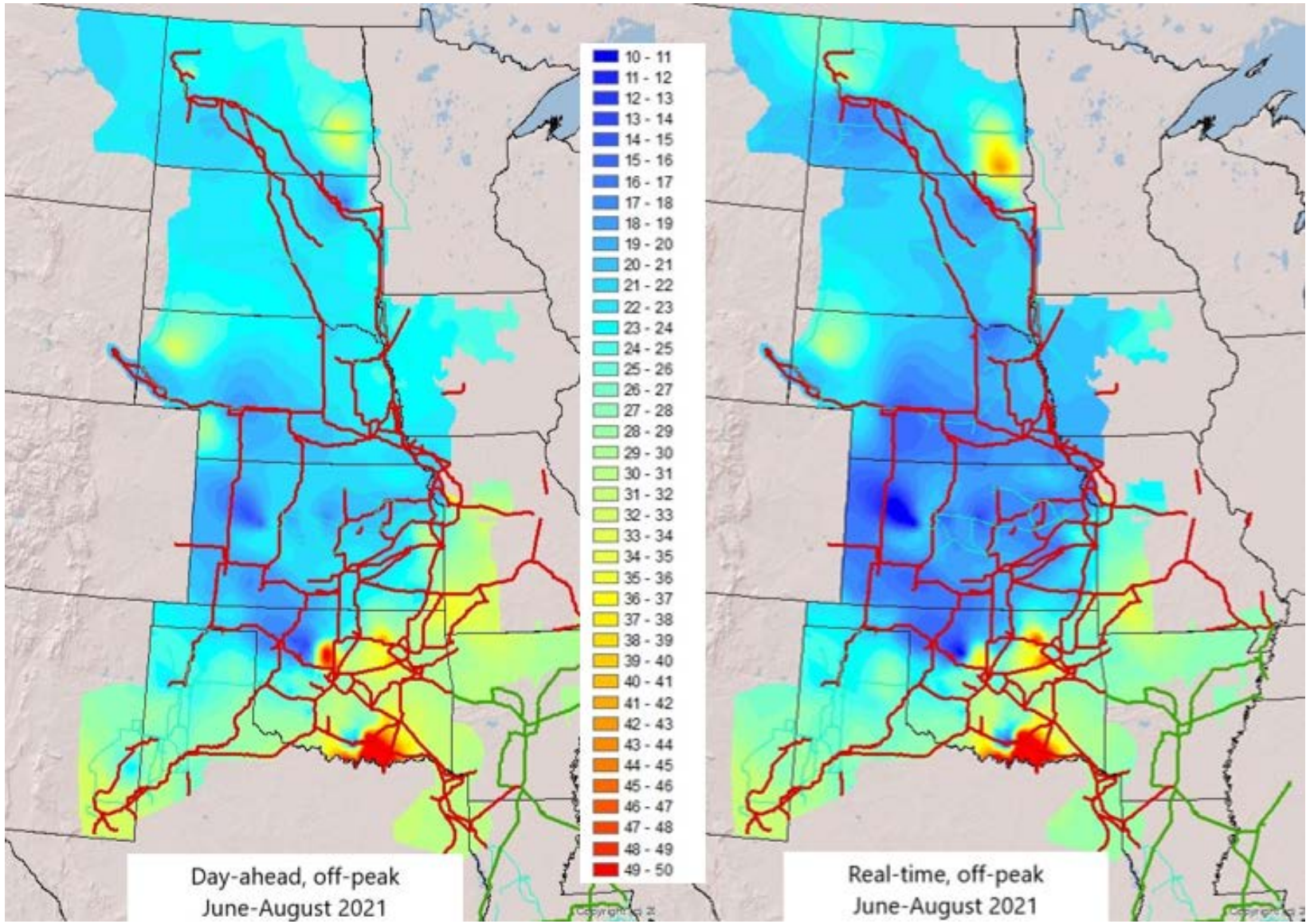
VIRTUAL PROFITS INCREASED



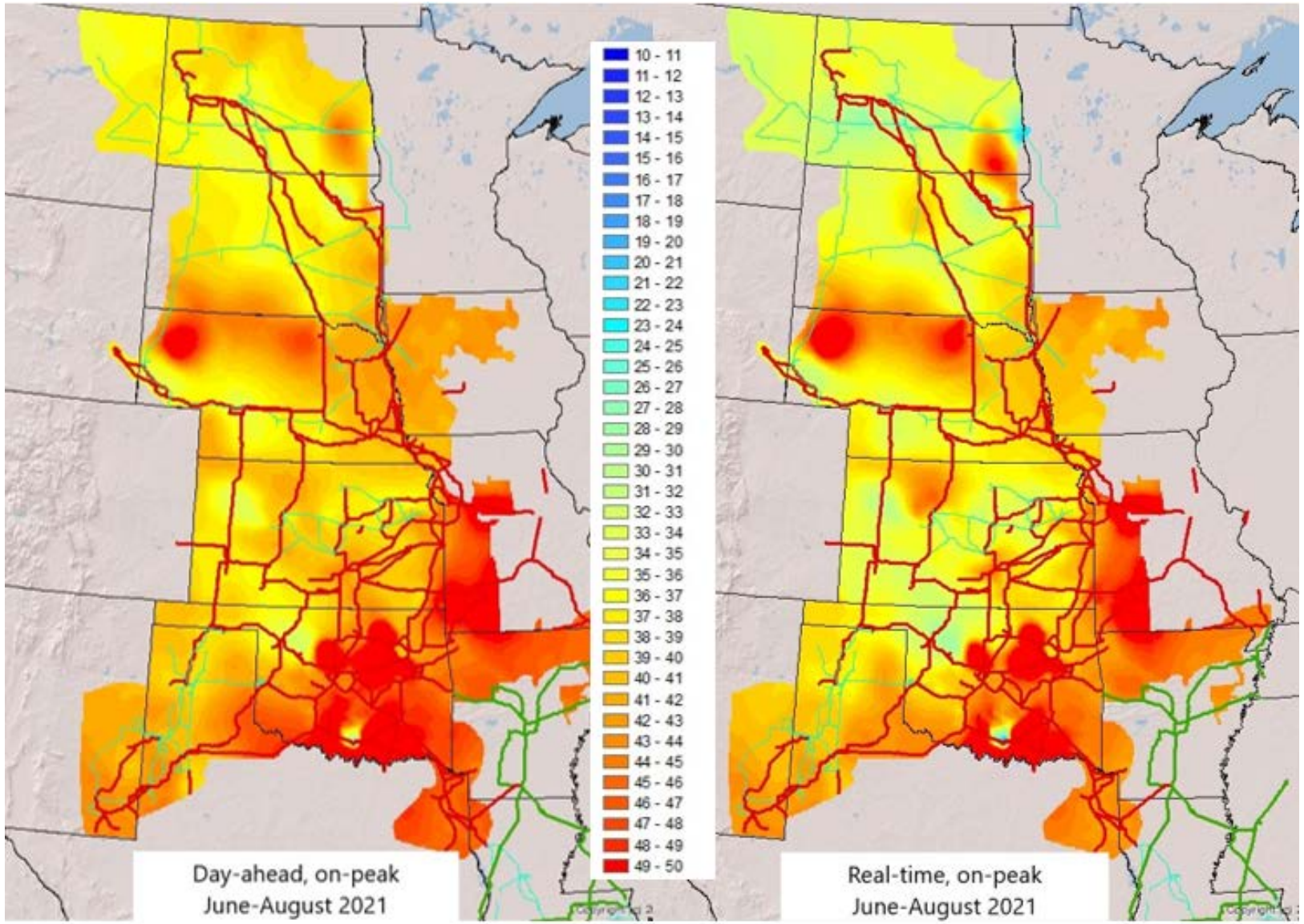
OUTAGES INCREASED



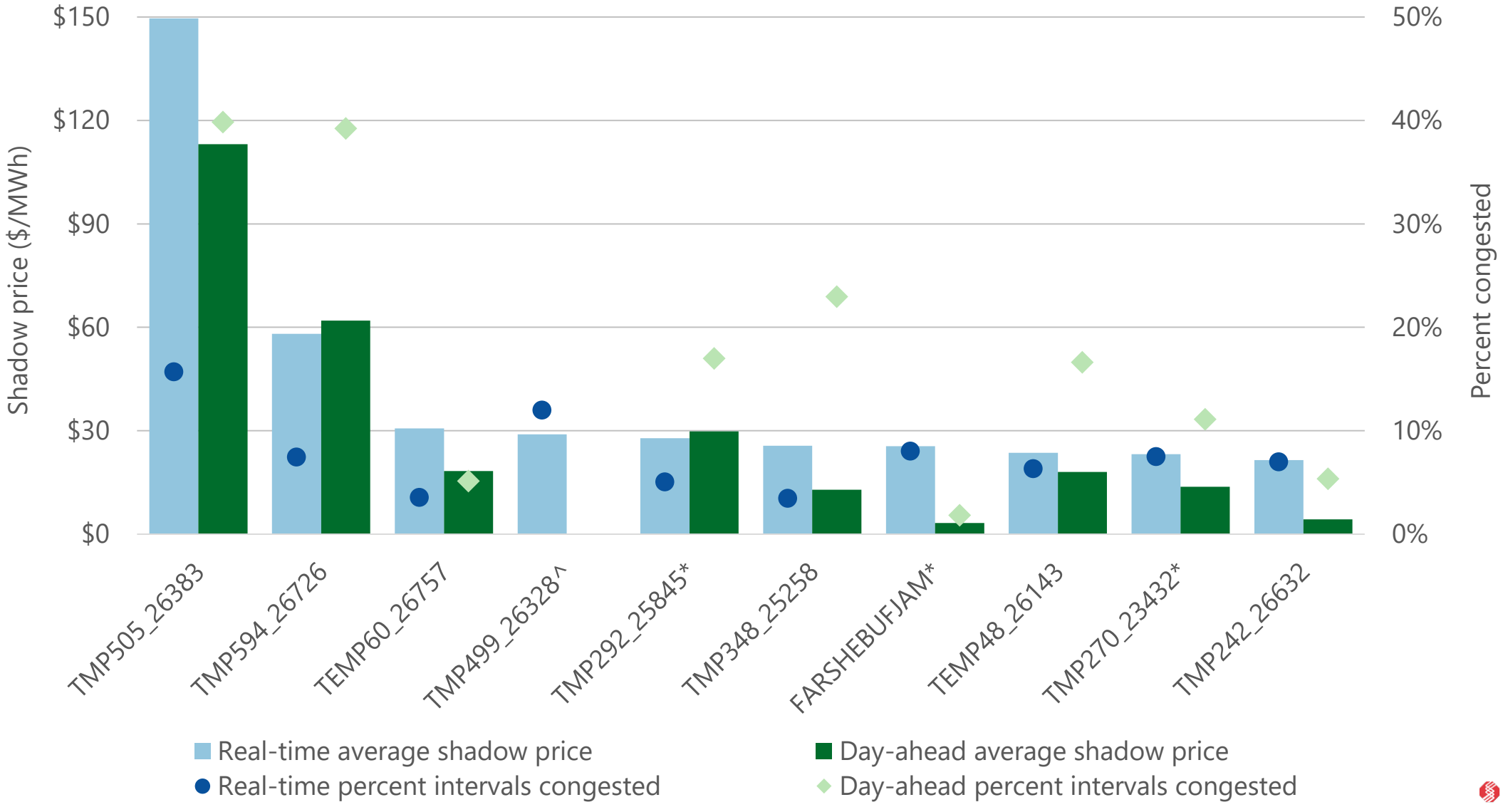
OFF-PEAK PRICES



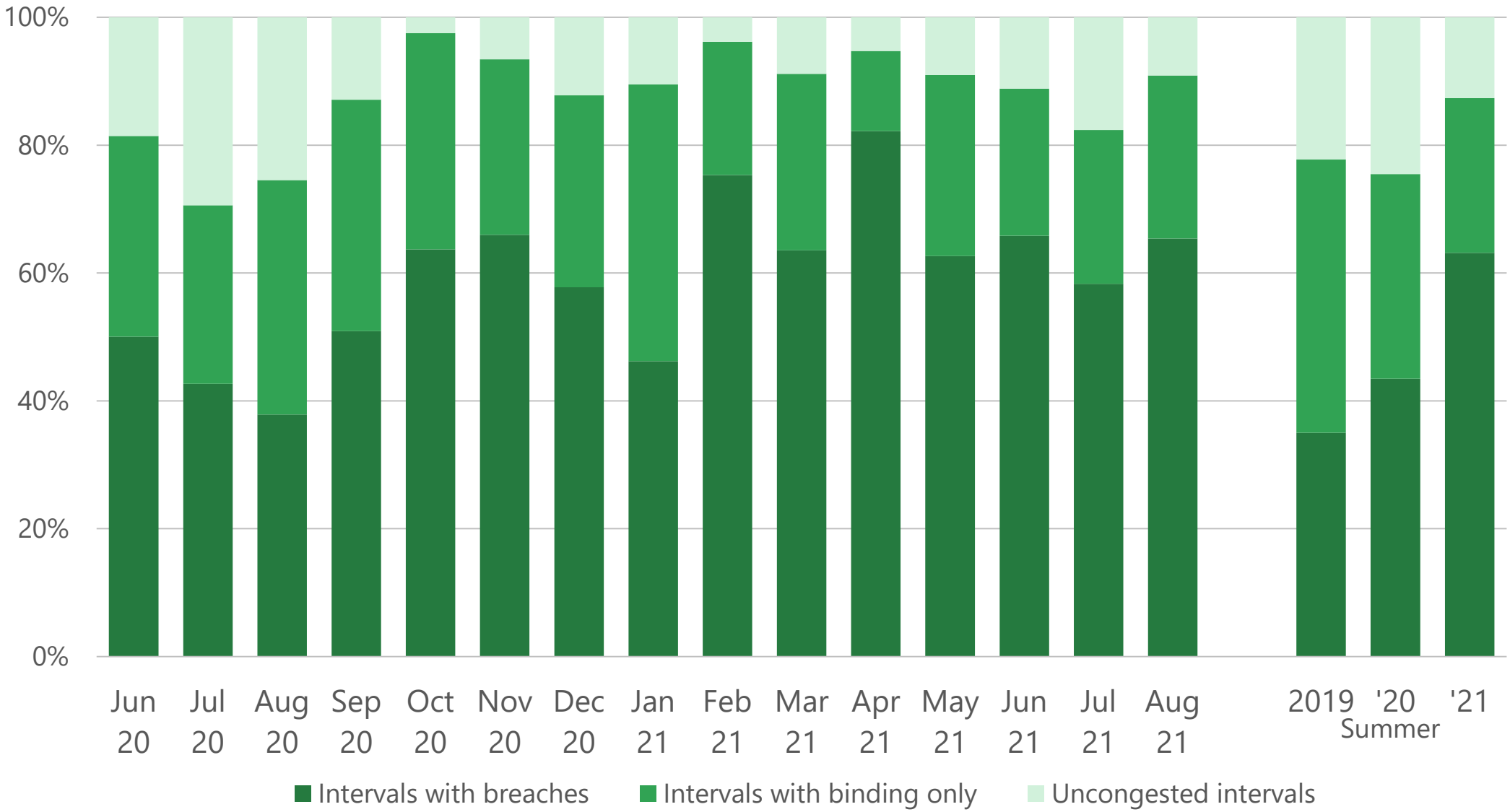
ON-PEAK PRICES



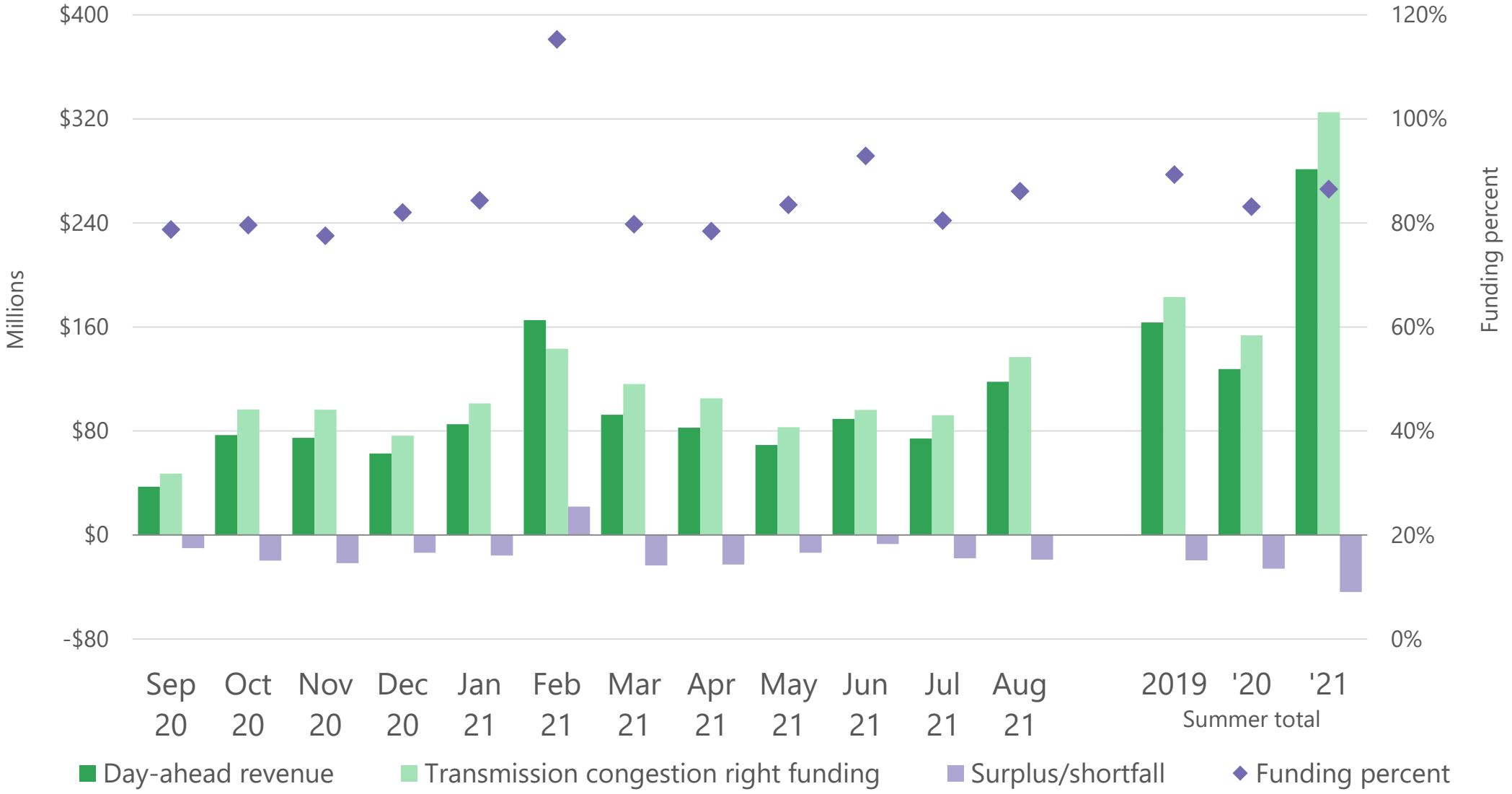
CONGESTION HIGHEST IN OKLAHOMA, AND ALONG MISO SEAMS



REAL-TIME BREACHED INTERVALS INCREASED



TCRs UNDERFUNDED FOR SUMMER



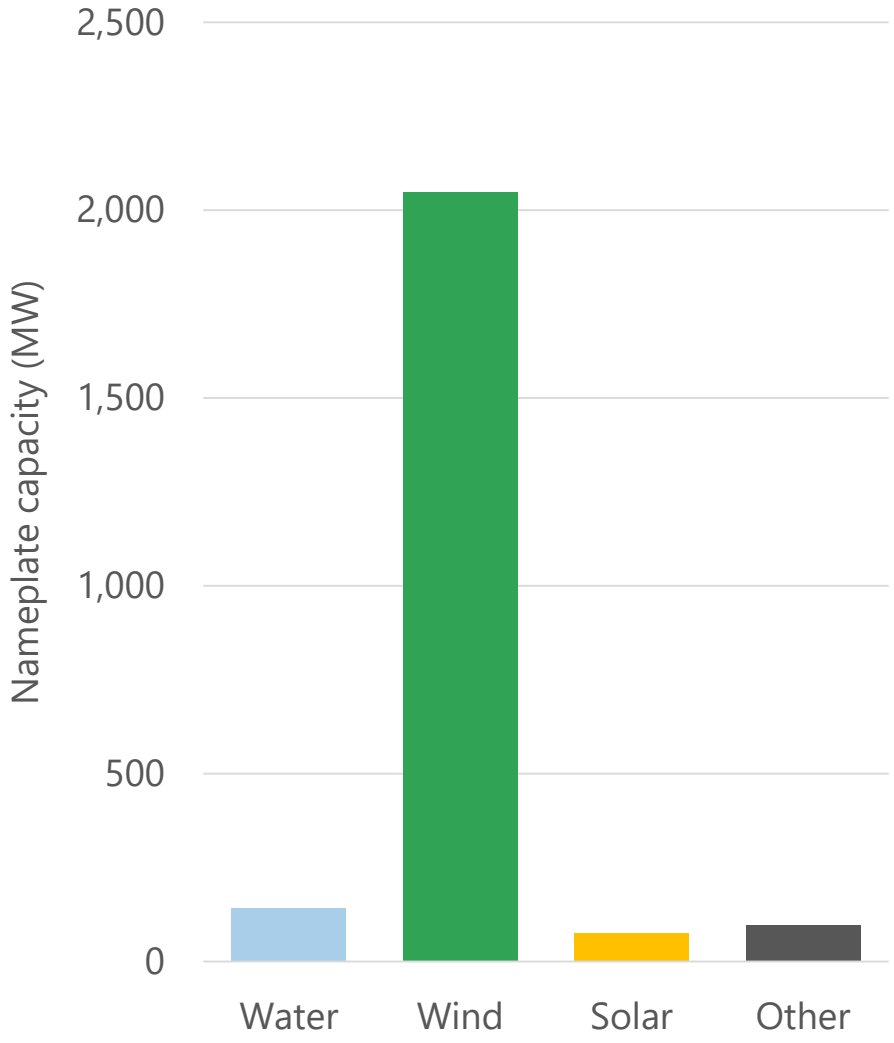
SPECIAL ISSUE

CONVERSION OF NON-DISPATCHABLE VARIABLE ENERGY RESOURCES TO DISPATCHABLE VARIABLE ENERGY RESOURCES

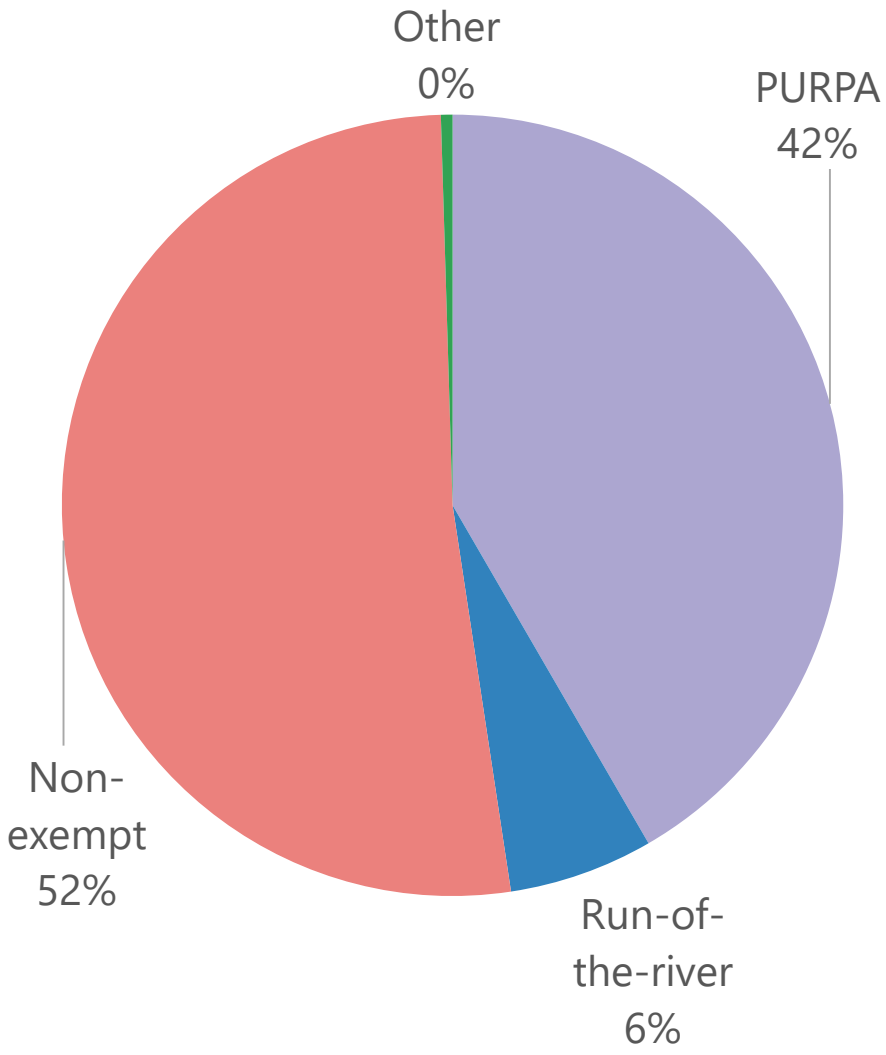
PURPOSE AND HISTORY

- Describe the history, current status, and efficacy of the non-dispatchable variable energy resource (NDVER) to dispatchable variable energy resource (DVER) conversion process.
- Concern first expressed in MMU 2015 Annual State of the Market report. Reasons for concern were:
  - unexpected price volatility
  - uneconomic production
- Conversion approved by FERC in April 2019.
- Changes were to Section 1.1 and 2.2 of Attachment AE of the SPP tariff.

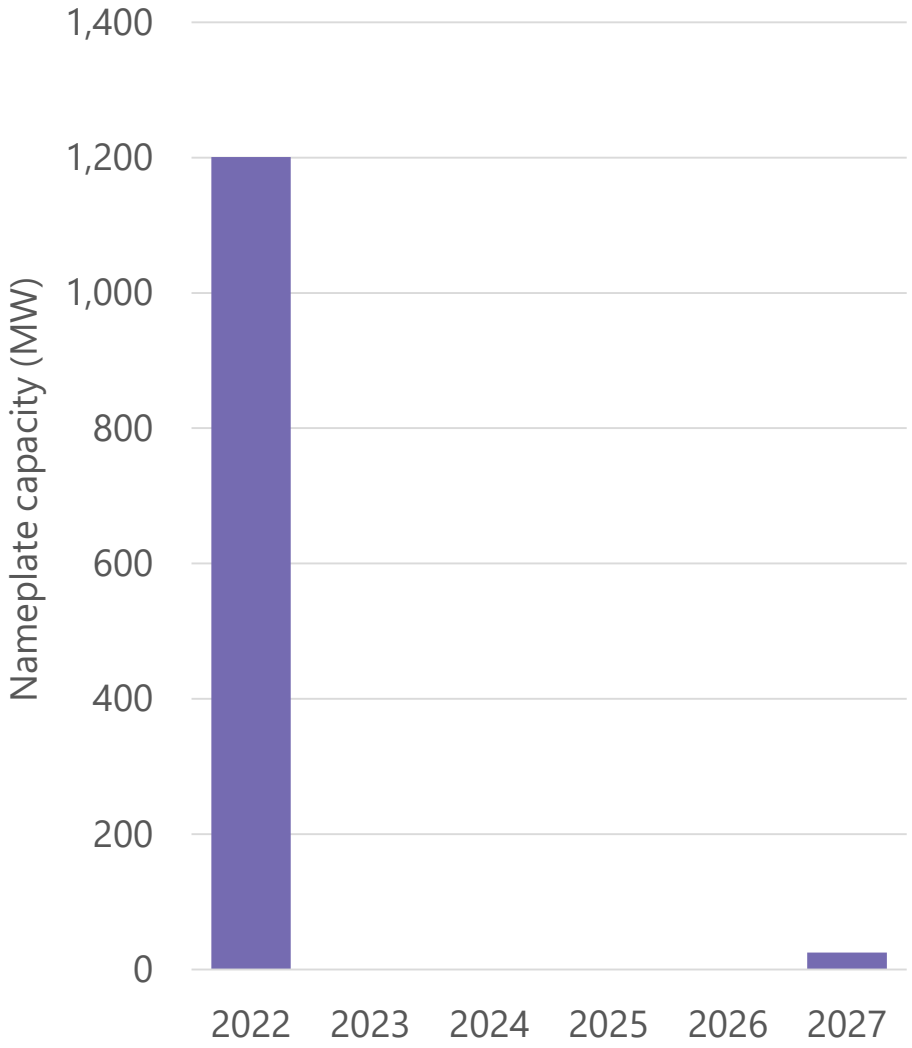
NON-DISPATCHABLE VARIABLE ENERGY RESOURCE NAMEPLATE CAPACITY AS OF AUGUST 31, 2021



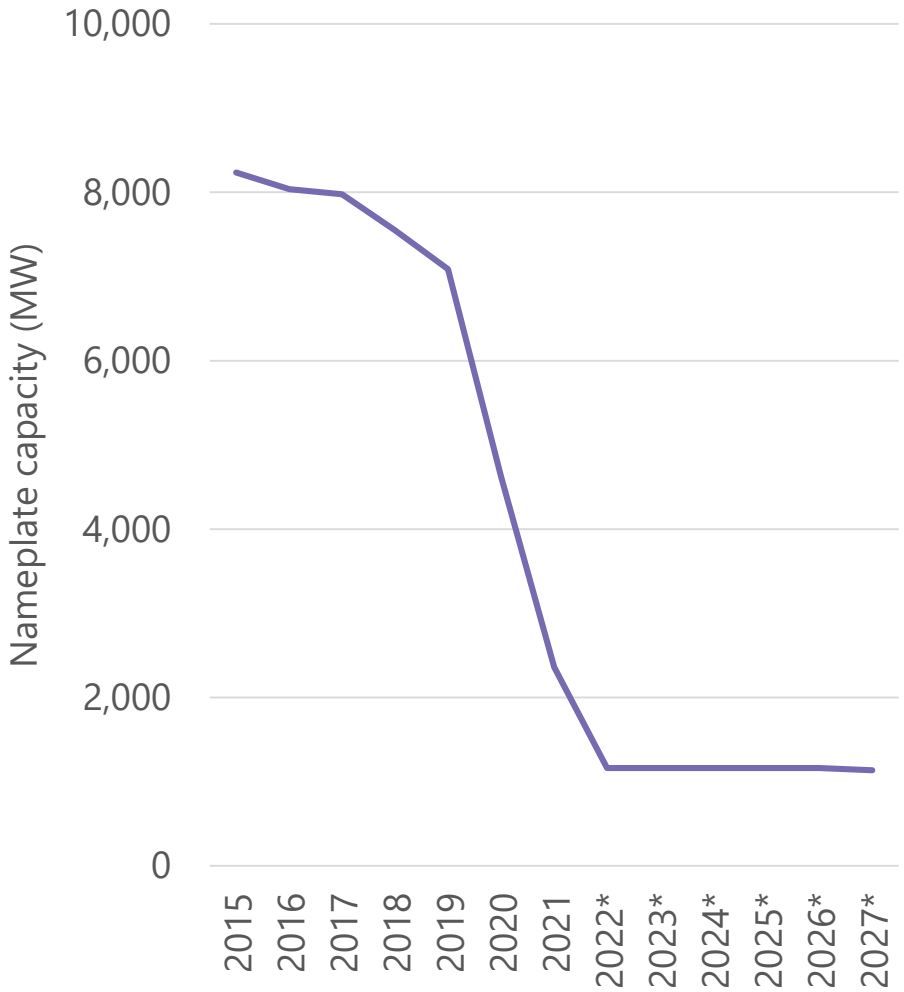
EXEMPT STATUS OF NON-DISPATCHABLE VARIABLE ENERGY RESOURCE BY CAPACITY



PROJECTED CONVERSION OF NON-DISPATCHABLE VARIABLE ENERGY RESOURCE BY YEAR



NON-DISPATCHABLE VARIABLE ENERGY RESOURCE CAPACITY BY YEAR



* indicates projection with all else remaining constant

EFFICACY

- Market re-runs were performed for:
  - September 20, 2021 (high wind)
  - September 21, 2021 (medium wind)
  - September 25, 2021 (low wind)
- Findings:
  - on days with medium-to-high wind penetration, congestion was lower, production costs were higher, and more intervals had higher locational marginal prices;
  - on days with low wind penetration there does not appear to be much difference in congestion, production costs, and location marginal prices relative to the original market data.

CONCLUSION

- Overall, the conversion reduced non-dispatchable variable energy resource capacity within the SPP market, while also being effective at reducing congestion and improving price formation on days with medium-to-high-wind penetration.

QUESTIONS?

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