Item 4.1: Summer 2020 Operational and Market Review

Dan Woodfin
Senior Director, System Operations
Mark Ruane
Director, Settlements, Retail, and Credit

Urgent Board of Directors Meeting

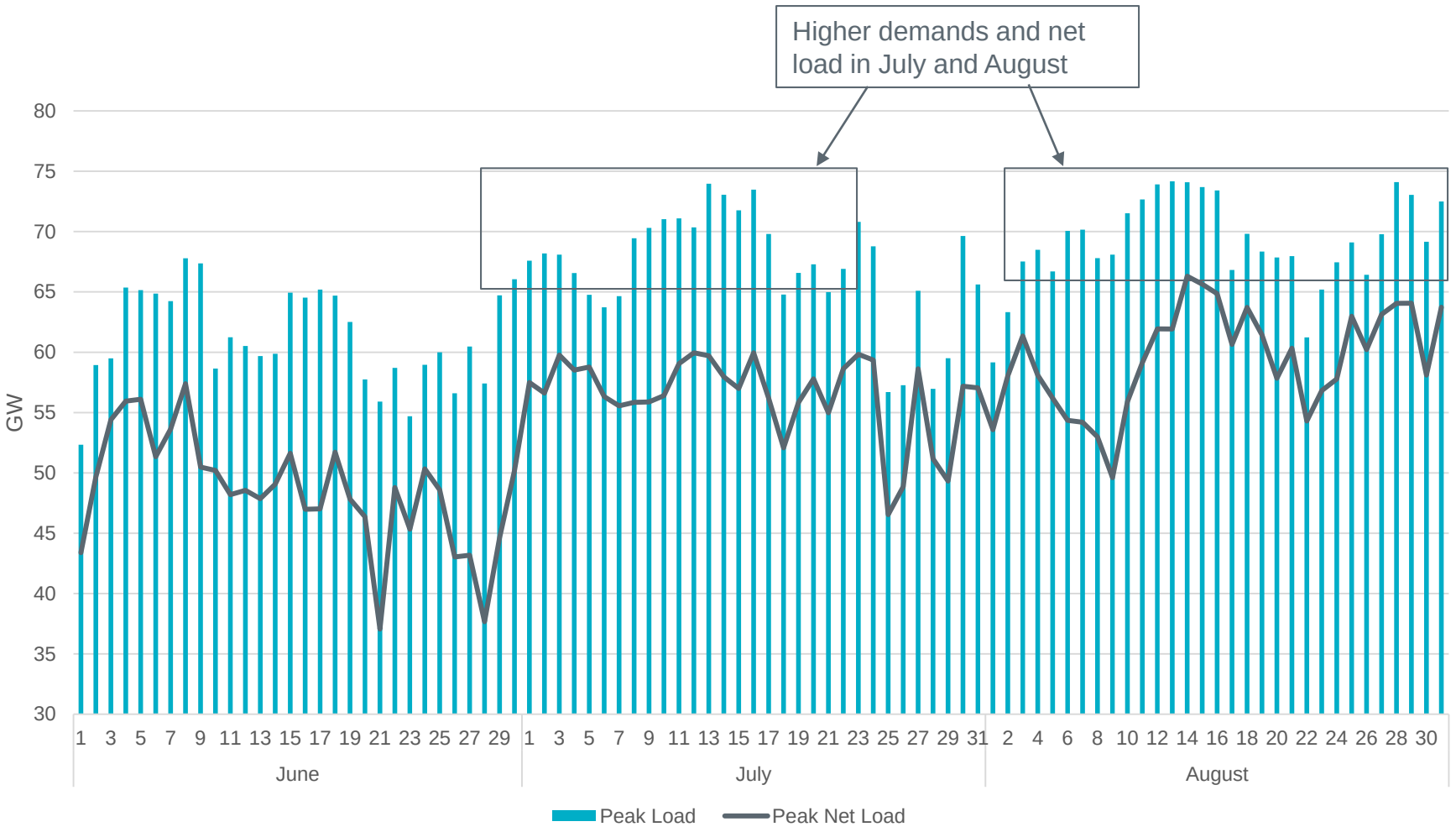
ERCOT Public
October 13, 2020

Key Observations for Summer 2020

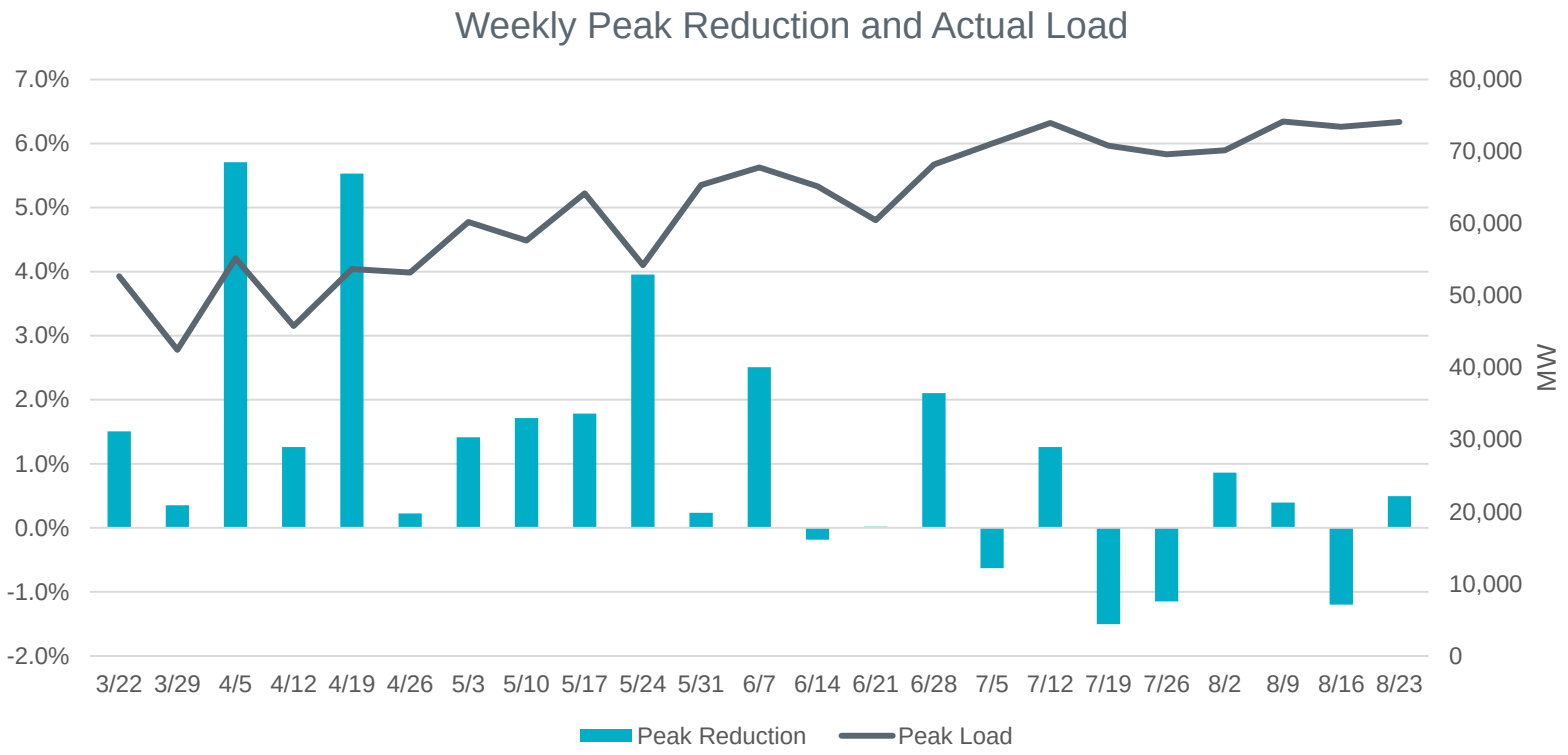
- Peak demand occurred on Aug. 13, reaching 74,328 MW* between 4 and 5 p.m. This was lower than the all-time peak demand record set in August 2019.
  - Seventh hottest summer statewide since 1895, based on mean temperature, but relatively milder in North Central region (only 9 days above 100° in DFW area).
  - Set new July peak demand record on July 13, reaching 74,311 MW* between 4 and 5 p.m.
  - No significant impacts to peak demand due to COVID-19.
- There were several days with tight conditions, but no Energy Emergency Alerts (EEAs) were declared.
- Hurricane Hanna made landfall on July 25 in southern Texas. There were no system reliability issues, but damage to 138-kV and 69-kV transmission lines caused significant congestion in the South Load Zone and high Congestion Revenue Right (CRR) values the following two weeks.
- Overall, market outcomes supported reliability needs.
- There were no Mass Transitions or short pays to Market Participants (MPs). There was one non-financial default from a MP who did not represent generation or load.

**Preliminary operating data*

Daily Peak Hour Demands



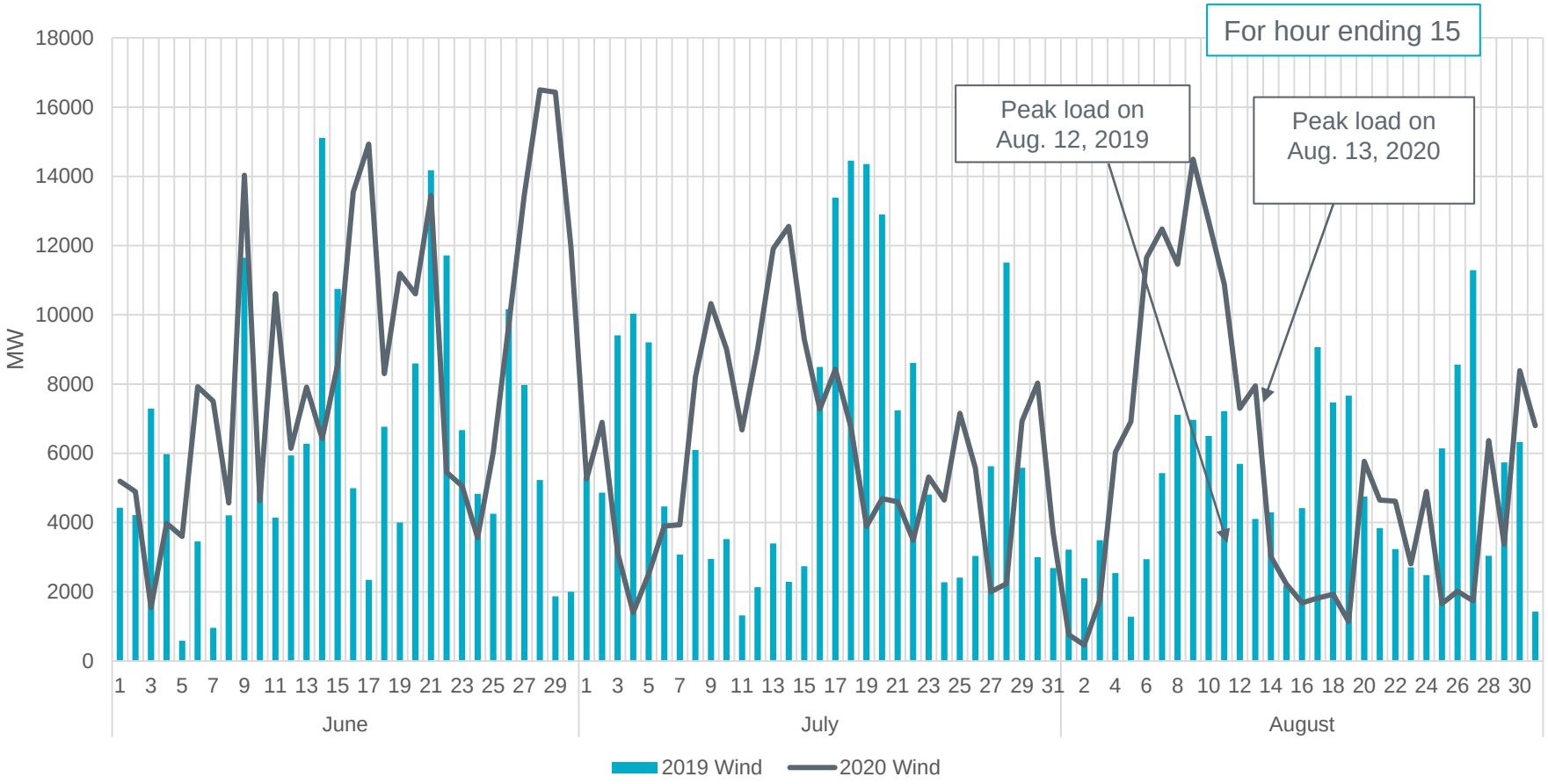
Pandemic Impacts on ERCOT Peak Load



- Peak demand impacts were the largest in April 2020. They have declined significantly since late June. By the end of the summer, there were no discernable impacts due to COVID-19.

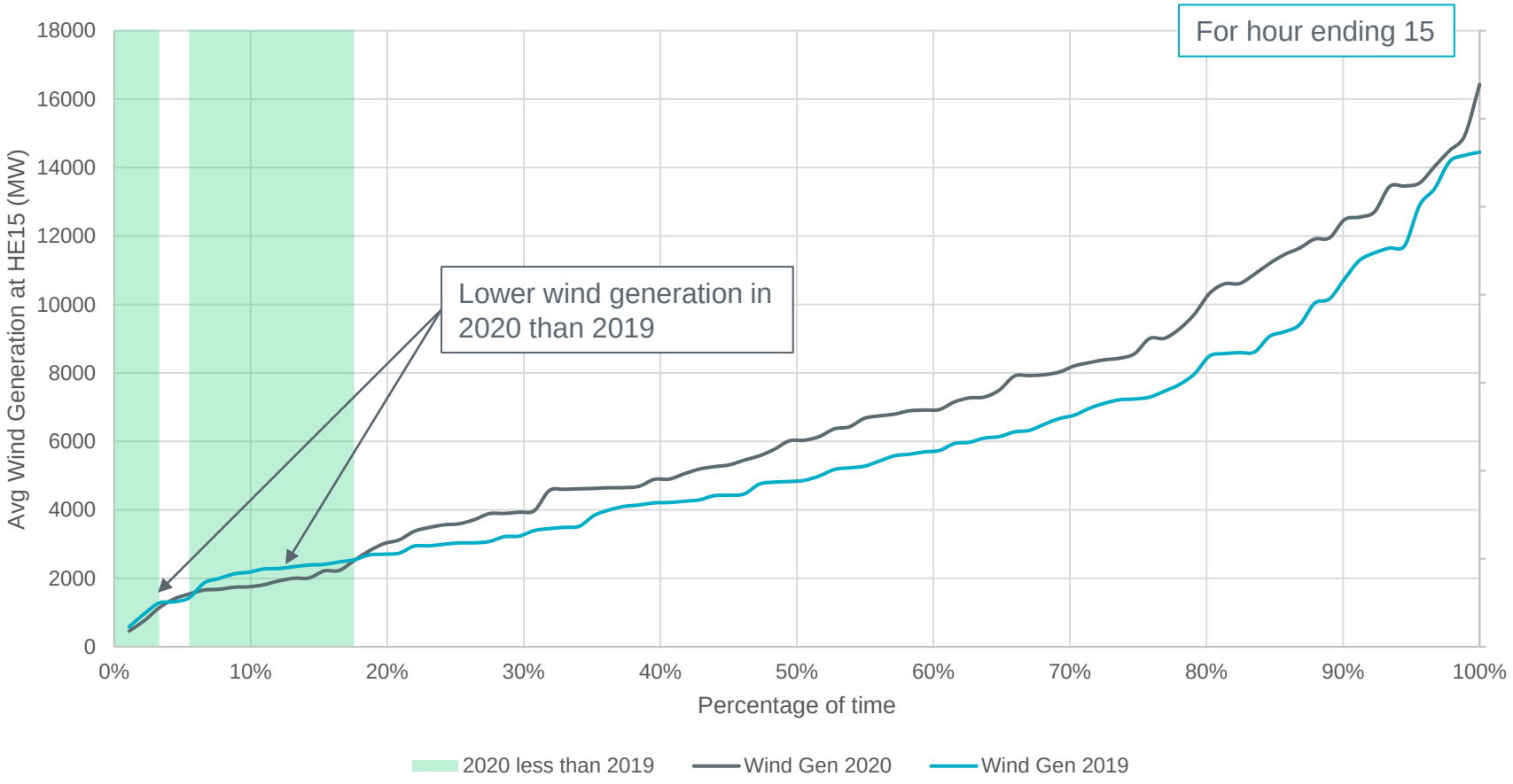
Wind Output

- ERCOT had approximately 4,000 MWs of additional installed wind capacity going into summer 2020 compared to summer 2019.



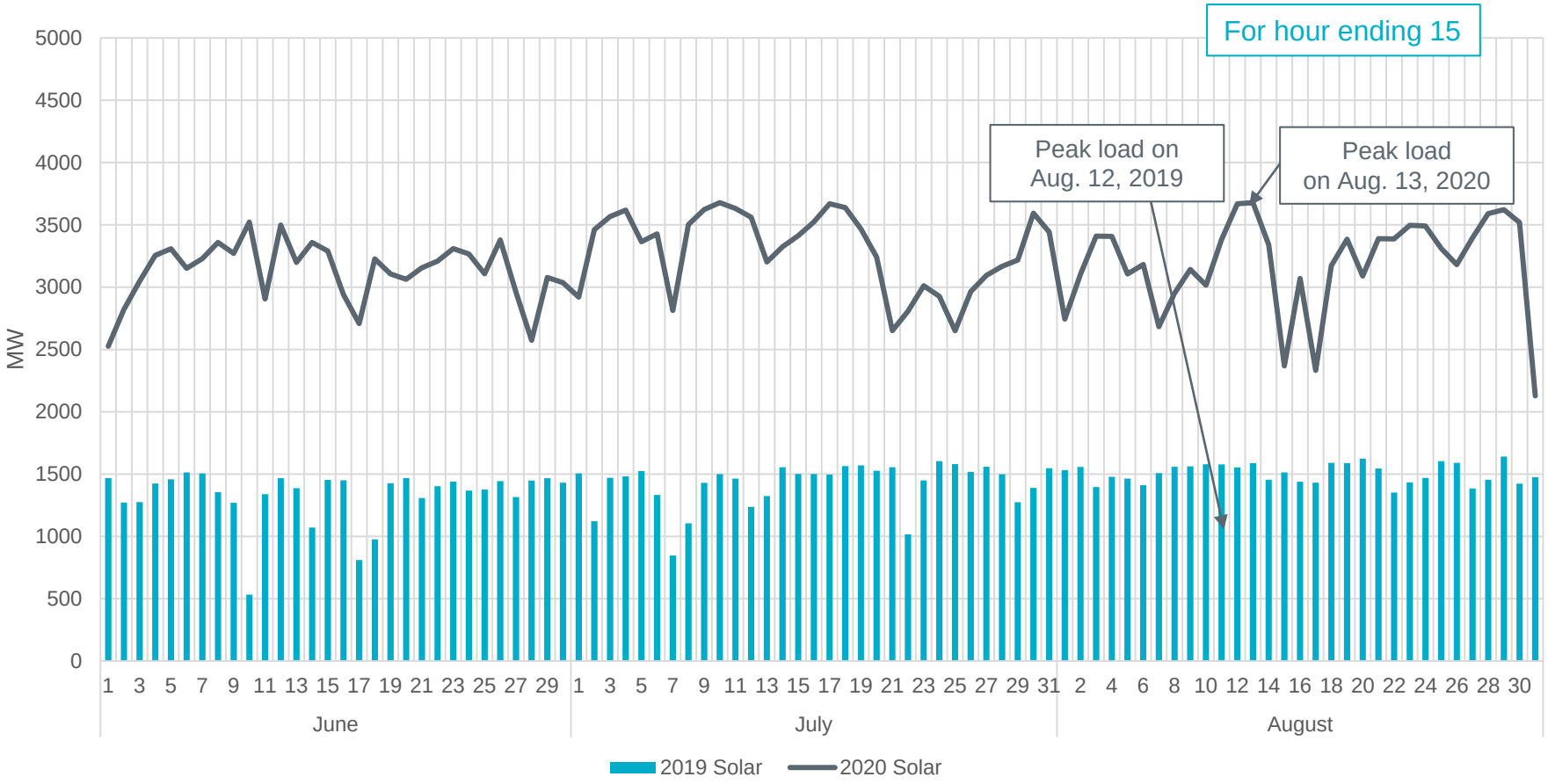
Daily Average Wind Generation

- Although wind generation was generally higher in summer 2020 than in summer 2019 (due to an increase in installed capacity), there were times when the average wind generation at hour ending 3 p.m. was lower than summer 2019.



Solar Output

- ERCOT had approximately 2,100 MWs of additional installed solar capacity going into summer 2020 compared to summer 2019.



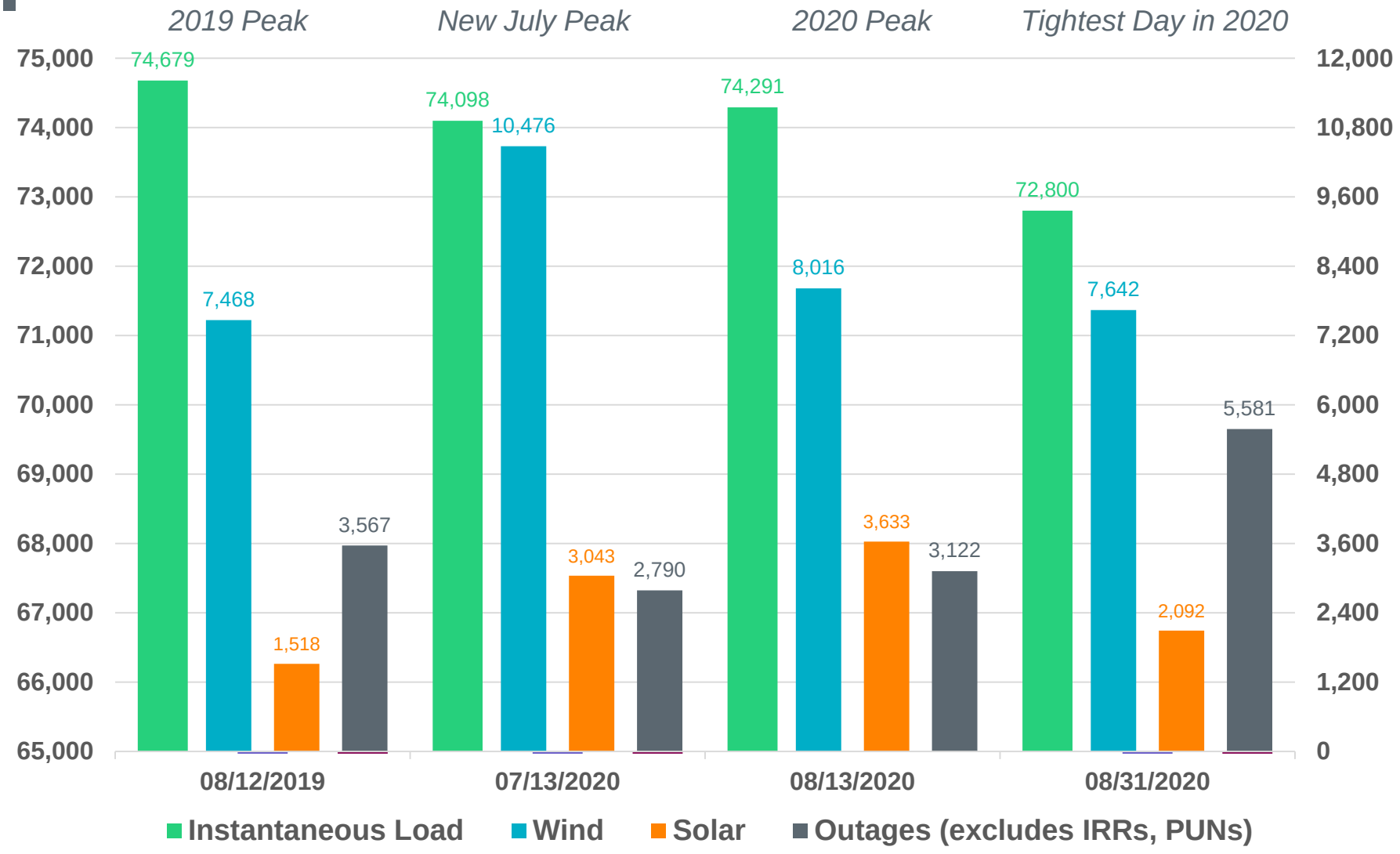
The Summer 2020 Seasonal Assessment of Resource Adequacy (SARA) Values vs. Actuals at Peak Demand

	2020 Actual Peak Demand (8/13/20)	Final 2020 Summer SARA*	Difference
Total Resources, MW	83,809	82,199	1,610
Thermal and Hydro	65,531	65,797	(267)
Private Use Networks, Net to Grid	3,011	3,176	(165)
Switchable Generation Resources	3,027	2,756	271
Wind Capacity Contribution	8,055	6,641	1,414
Solar Capacity Contribution	3,620	2,979	641
Non-Synchronous Ties	565	850	(285)
Peak Demand, MW	74,328	75,200	(872)
Reserve Capacity, MW	9,481	6,999	2,482
Total Outages, MW	3546**	4,069	(523)
Capacity Available for Operating Reserves, MW	5,935	2,930	3,005

Not as tight as expected due to more wind and solar, lower demand and fewer outages

Source: Final 2020 Summer SARA
*The totals for the final 2020 summer SARA column combine multiple rows into a single row in some cases. (E.g., already in-service thermal and hydro resources with planned thermal and hydro resources)
**The outage information in this table was extracted on Sept. 15, 2020.

Instantaneous Load, Wind, Solar and Outages at Peak*

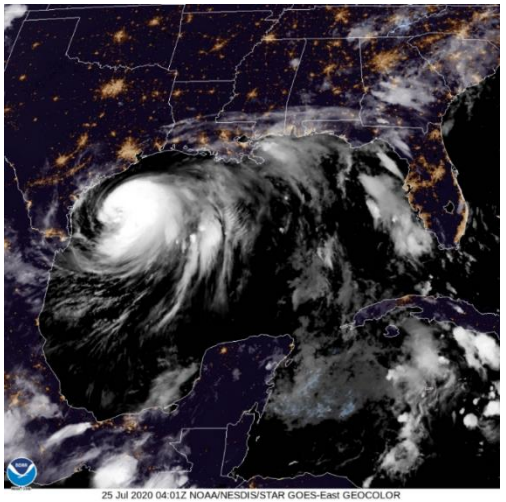


** Load, wind and solar values based on telemetry at time of instantaneous load peak*

Hurricanes in Texas Gulf During Summer 2020

Hurricane Hanna (Landfall on July 25, 2020)

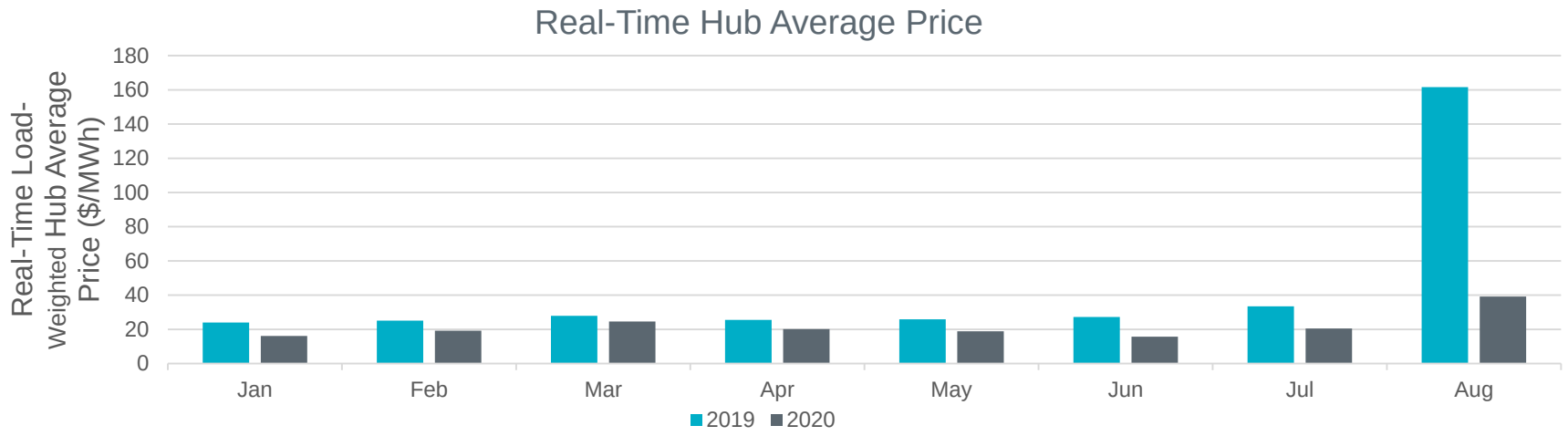
- No system reliability issues and no damage to 345-kV lines during the storm.
- Approximately 1,800 MW of wind generation unavailable during periods of high wind speeds.
- Approximately 20 138-kV lines and 10 69-kV lines experienced storm-related damage.
  - A few of the 138-kV outages were significant and played a role in a transmission emergency that occurred on Aug. 4.

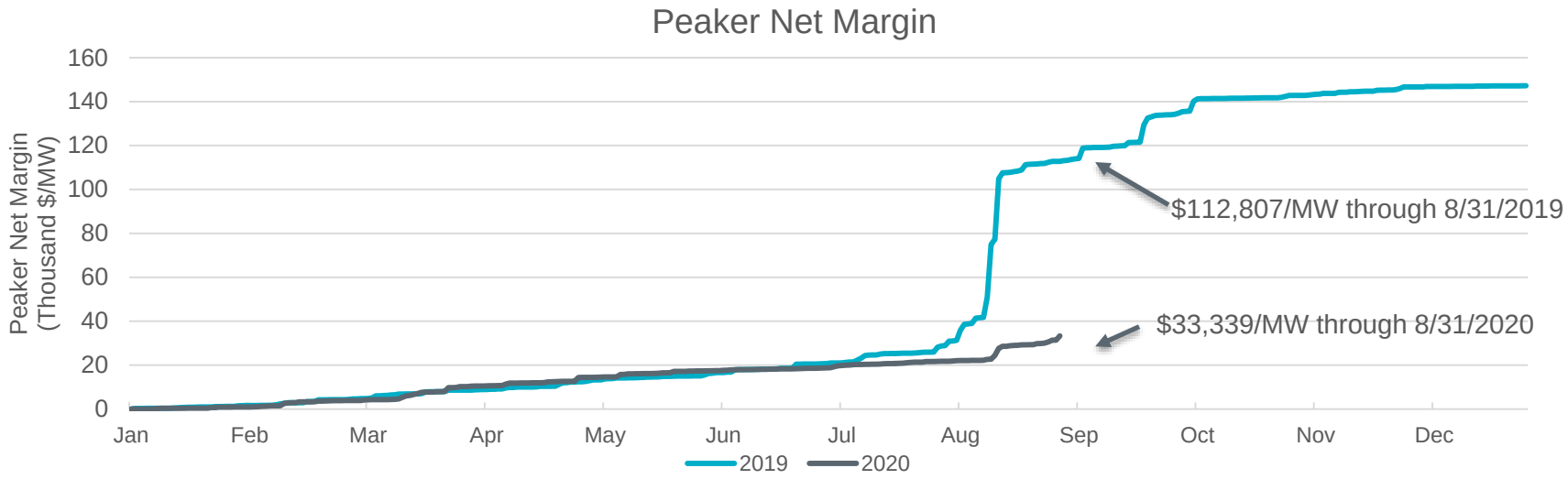


Hurricane Laura (Landfall on Aug. 27, 2020)

- No system reliability issues and no damage or outages to ERCOT bulk electric system during the storm.
- Assisted MISO by preparing to provide Block Load Transfers (BLTs) at Crosby and College Station. No BLTs were implemented.
- MISO requested Switchable Generation Resource (SWGR) at Frontier.

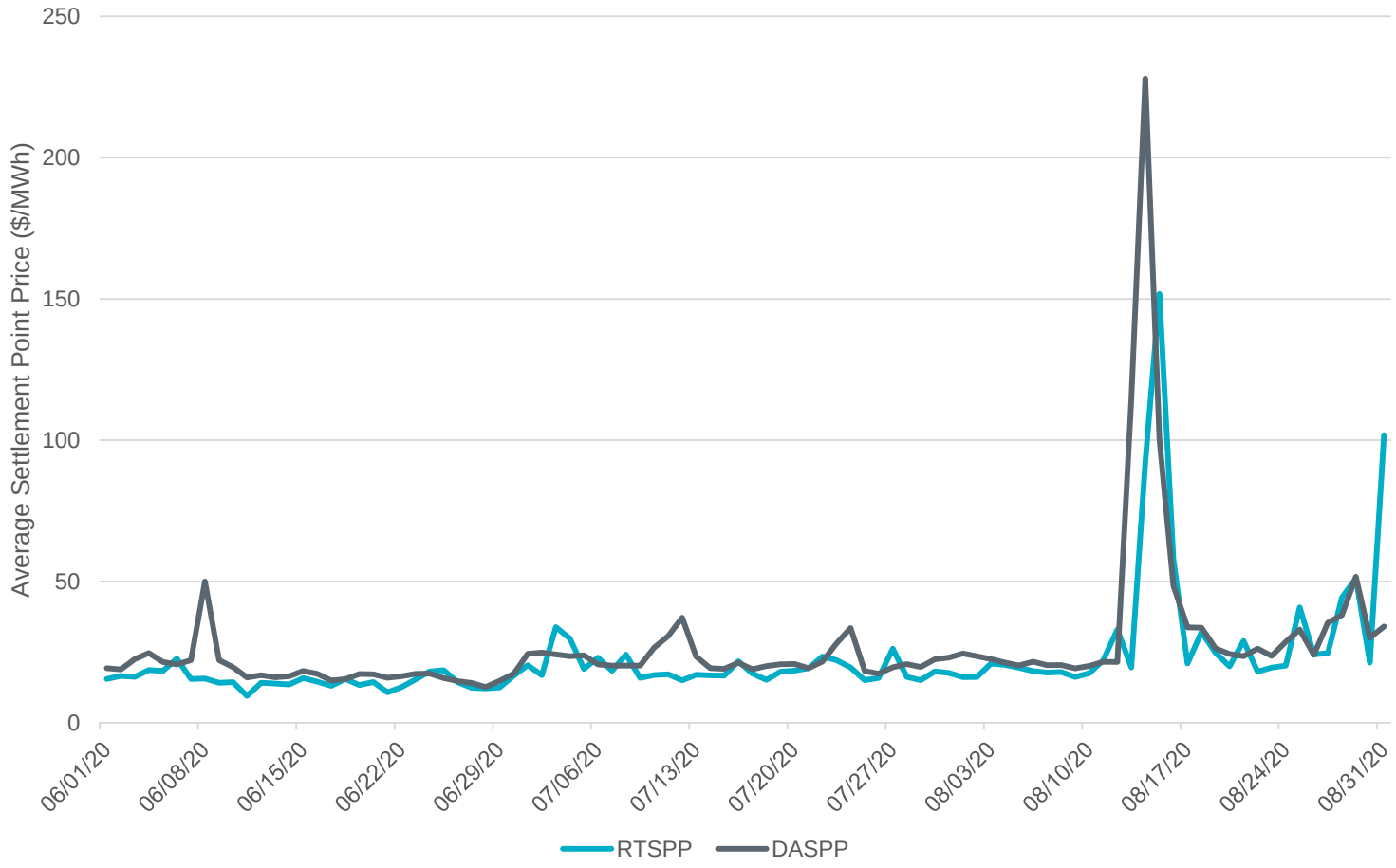
Real-Time Hub Price and Peaker Net Margin





Daily Unweighted Average DAM and RTM Prices

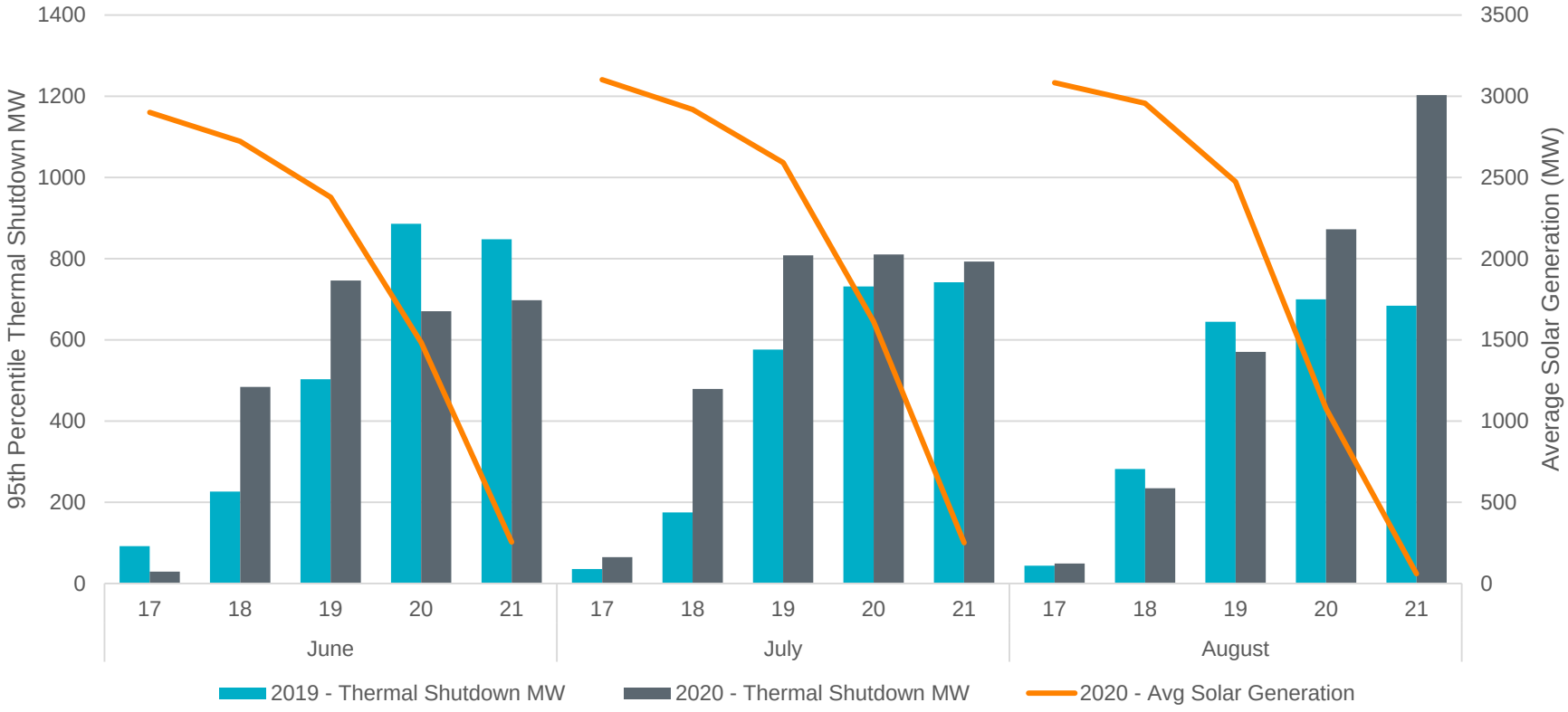
- Day-Ahead and Real-Time Market price convergence remained within a normal range during summer 2020.



Appendix

Increase in Thermal Shutdown MWs During Sunset

- In 2020, we observed tighter operating conditions and lower operating reserves as solar generation dropped off at sunset and thermal generation began to shut down after load peaked. These tighter conditions were more pronounced on days with lower total renewable generation.



Transmission Emergencies in the Rio Grande Valley

Aug. 4

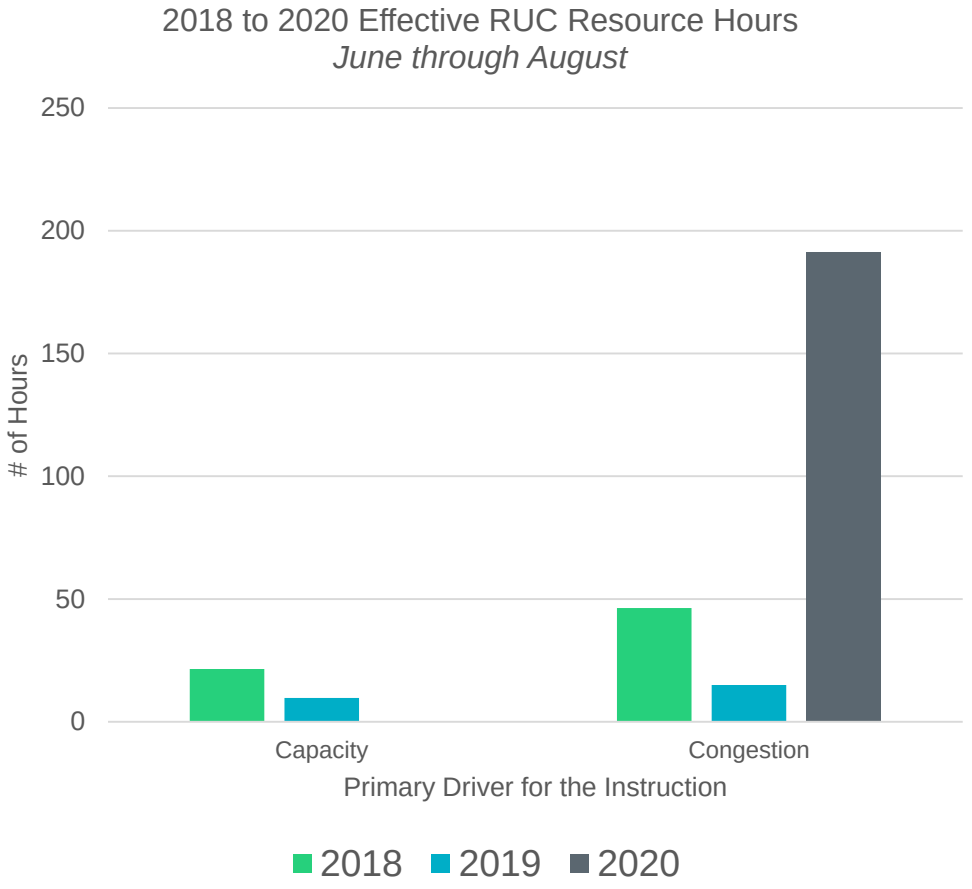
- Multiple 138-kV transmission lines were on forced outage due to Hurricane Hanna.
- Severe post-contingency overloads on 138-kV transmission system with mitigation plan ready for several days following Hanna.
- Received 25 MW of emergency energy from CENACE.

Sept. 1

- Generators were on forced outage when load was highest in the Valley.
- Base case overload of normal rating on a 138-kV transmission line.
- Deployed 0.5 MW of Load Resources.
- Shed 18 MW of firm load.
- Received 160 MW of emergency energy from CENACE.

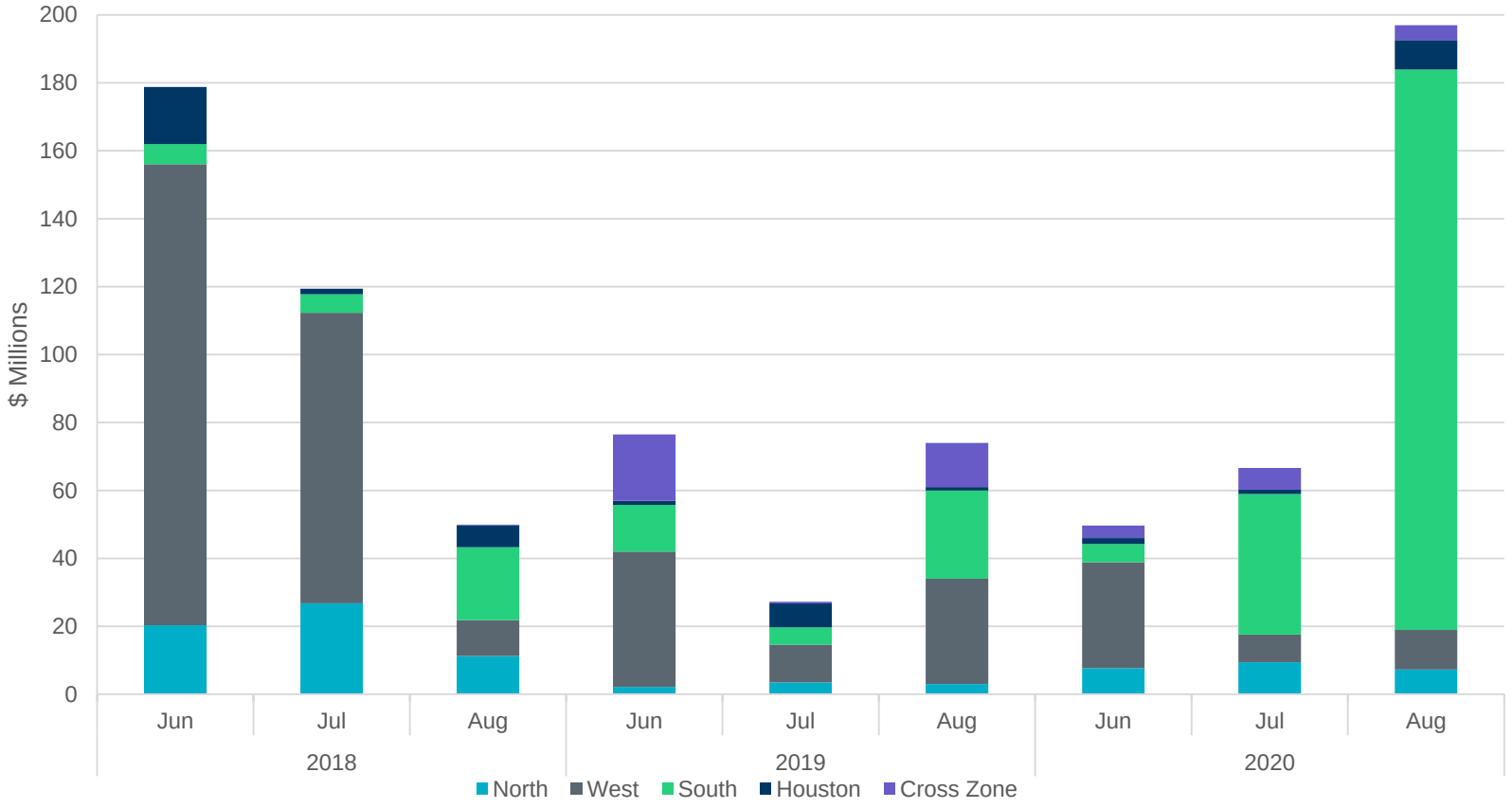
Number of RUCs in 2020 Increased Primarily Due to Hurricane Hanna

- Damage to transmission equipment from Hurricane Hanna, which made landfall on July 25, caused significant congestion in southern Texas. Most of the RUC hours were associated with this congestion.
- No RUC hours were for capacity.

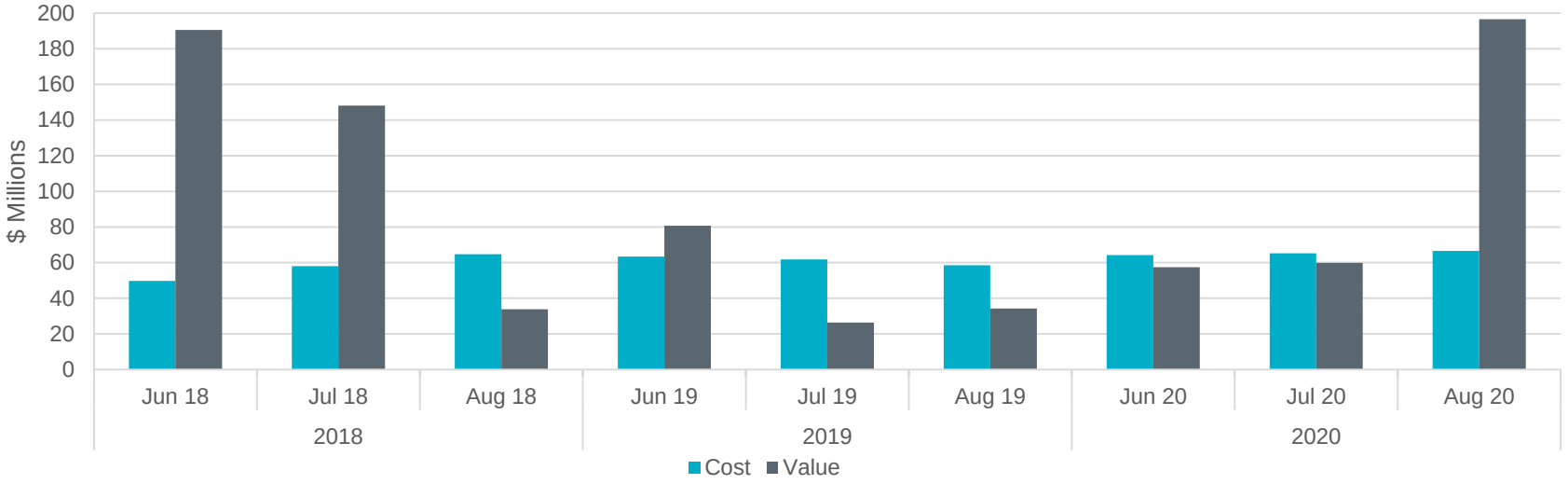


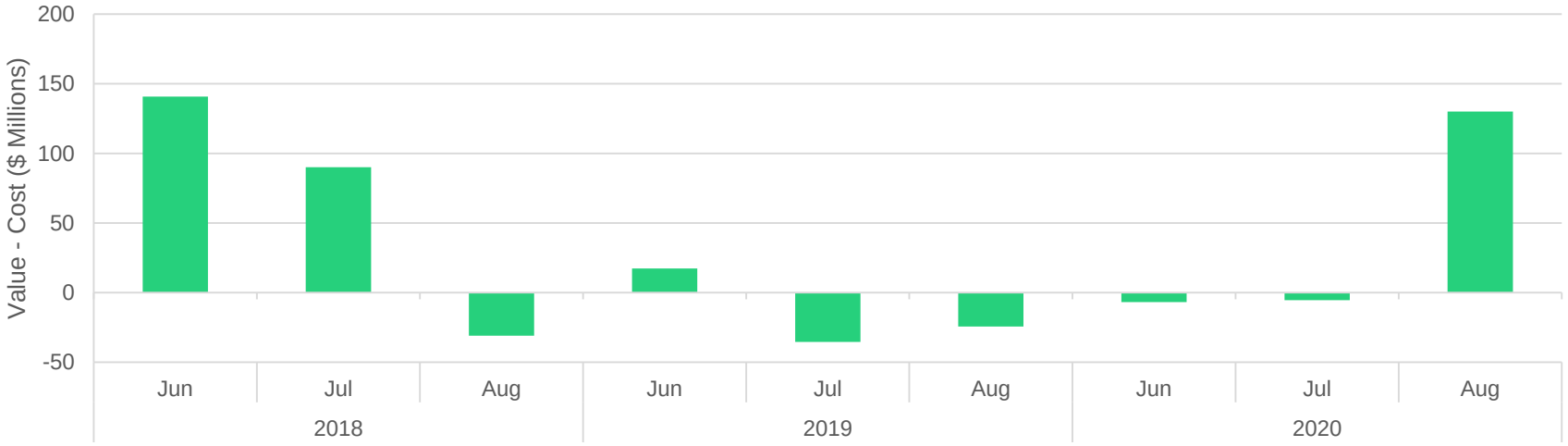
Real-Time Congestion Rent by Zone

- The increase in Congestion Rent in August 2020 was driven by hurricane-related congestion in the Valley.



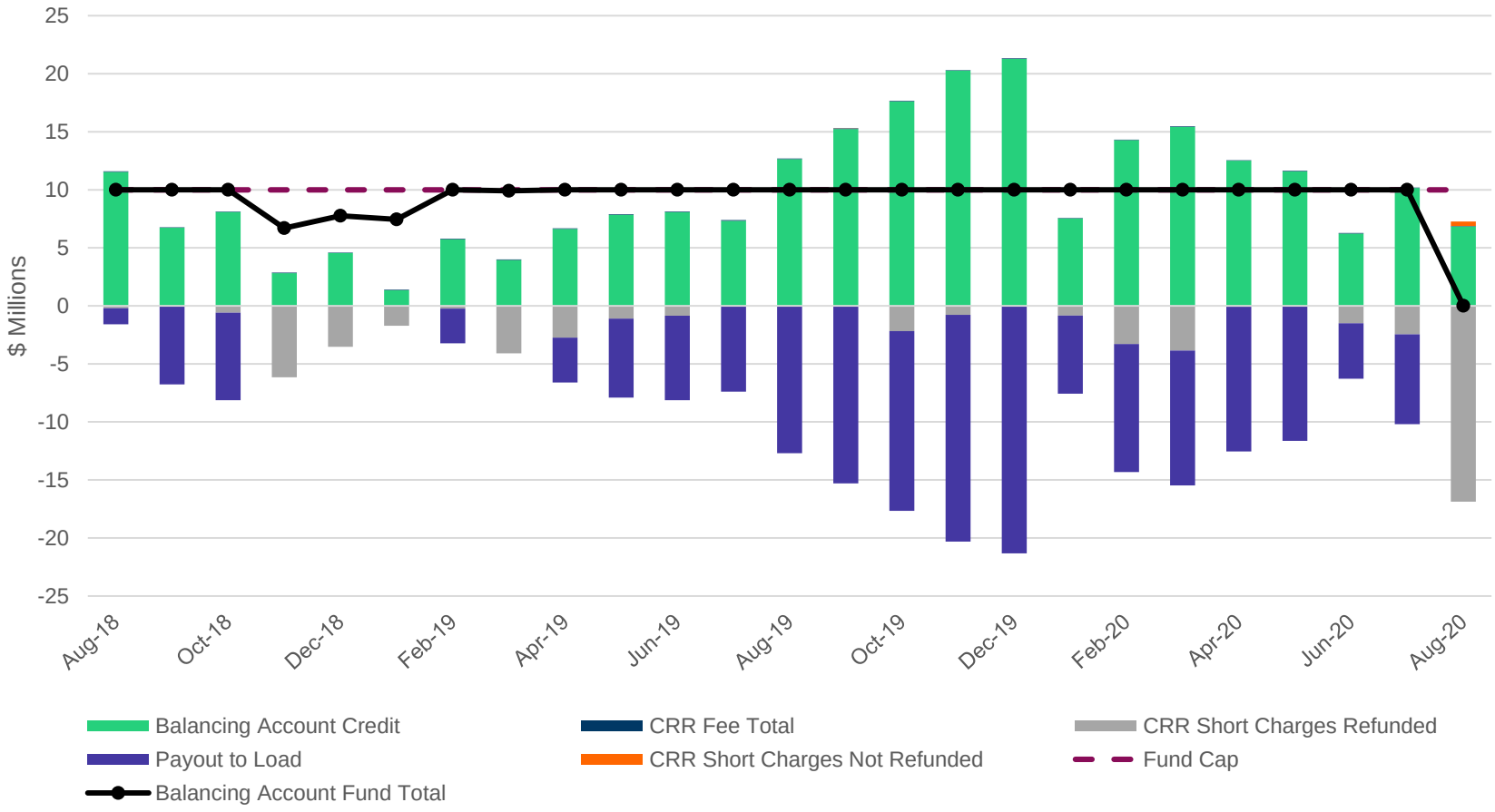
Congestion Revenue Rights (CRRs) Cost vs. Value





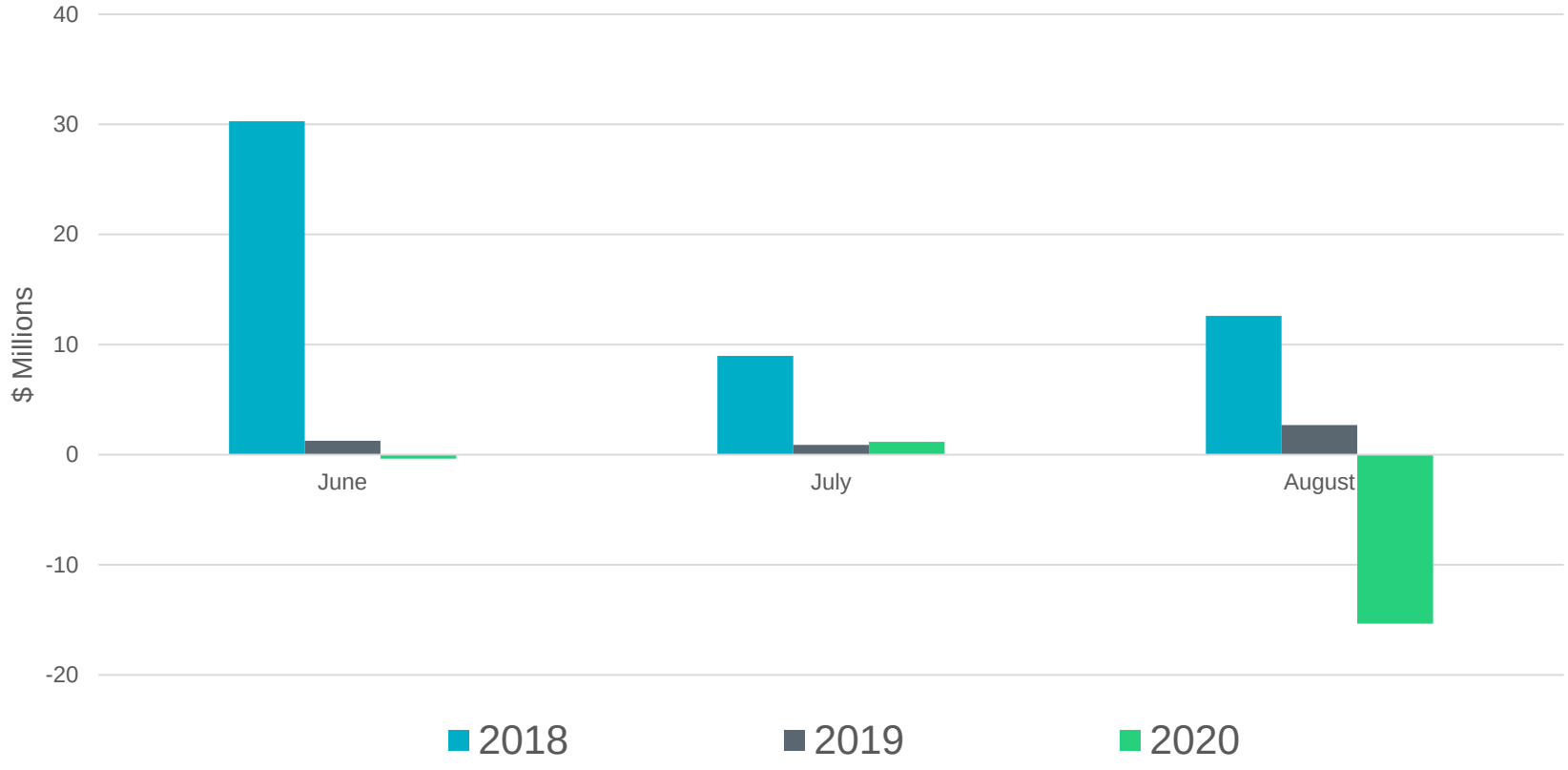
Congestion Revenue Rights (CRRs) Balancing Account

- CRR settlement payments were under-funded in August. $0.39M of CRR short charges were not refunded, largely due to congestion in the Valley area.

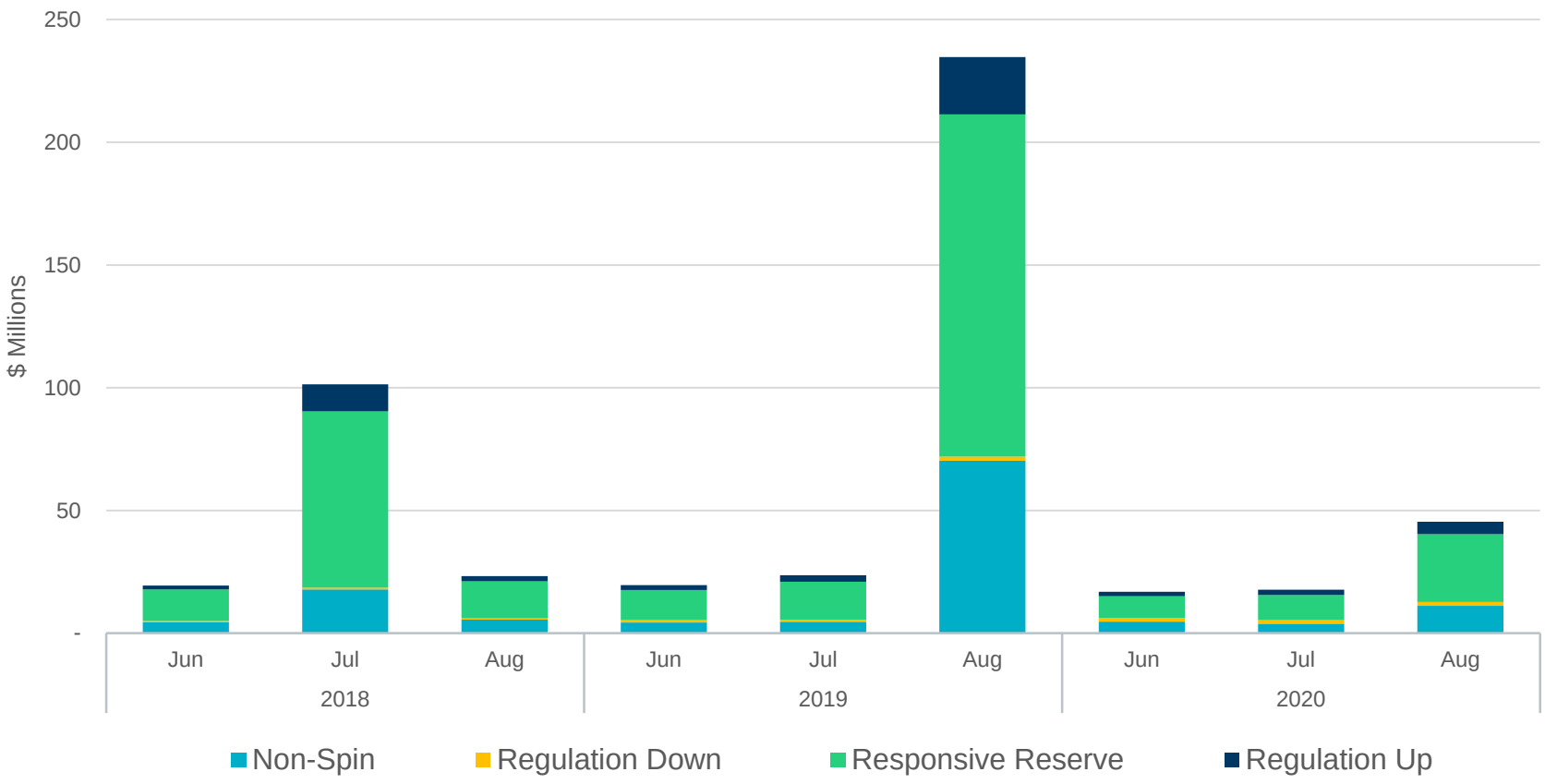


Real-Time Revenue Neutrality

- Real-Time Revenue Neutrality (RTRN) from June to August 2020 averaged $4.9M per month, primarily due to congestion in the Valley area. Average monthly RTRN for the previous two summers was $9.5M.

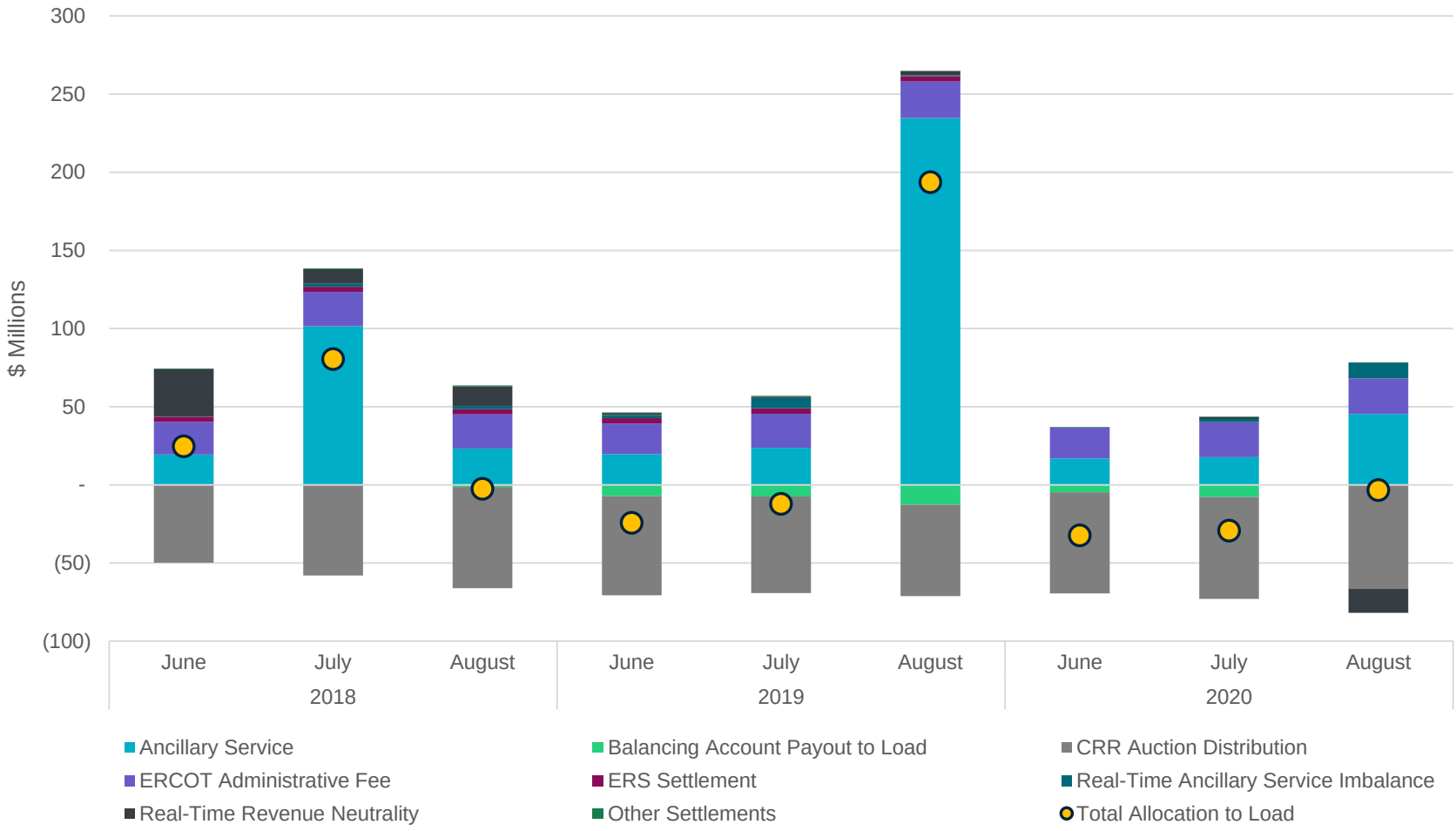


Cost for Ancillary Services



Net Allocation to Load

- Net allocation to load decreased relative to prior summers, primarily due to reduced Ancillary Services costs.



Total Potential Exposure, Collateral and Collateral Calls

- In September 2019 and August 2020, increases in Total Potential Exposure and collateral calls were mainly driven by the increase in ERCOT Real-Time and Day-Ahead prices.