Looking Past the Peak: 2020 Summer Review

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ERCOT Public
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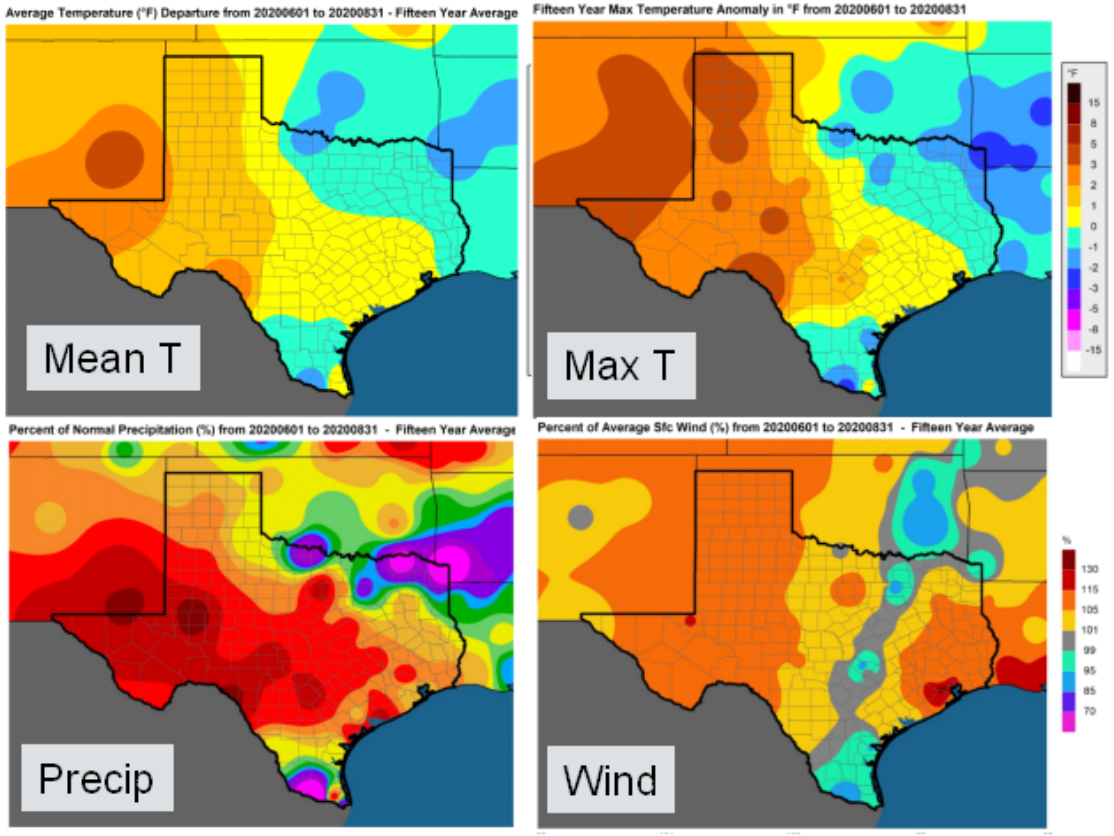
Key Observations for Summer 2020

- Peak demand was on August 13, reaching 74,328 MW* between 4 and 5 p.m. This peak demand was lower than all-time peak record set in August 2019.
- There were several days with tight conditions, but no Energy Emergency Alerts (EEAs) were declared.
- Continued trend of tighter conditions in mid-afternoon due to trough in overall system wind output and saw new trend of tighter conditions in early evening as solar generation ramps down
- Hurricane Hanna, made landfall on July 25th in southern Texas. There were no system reliability issues due to the hurricane but there was damage to 138 kV and 69 kV transmission lines that caused significant congestion in South load zone and high CRR values in the following two weeks.
- Overall, the market outcomes supported reliability needs.

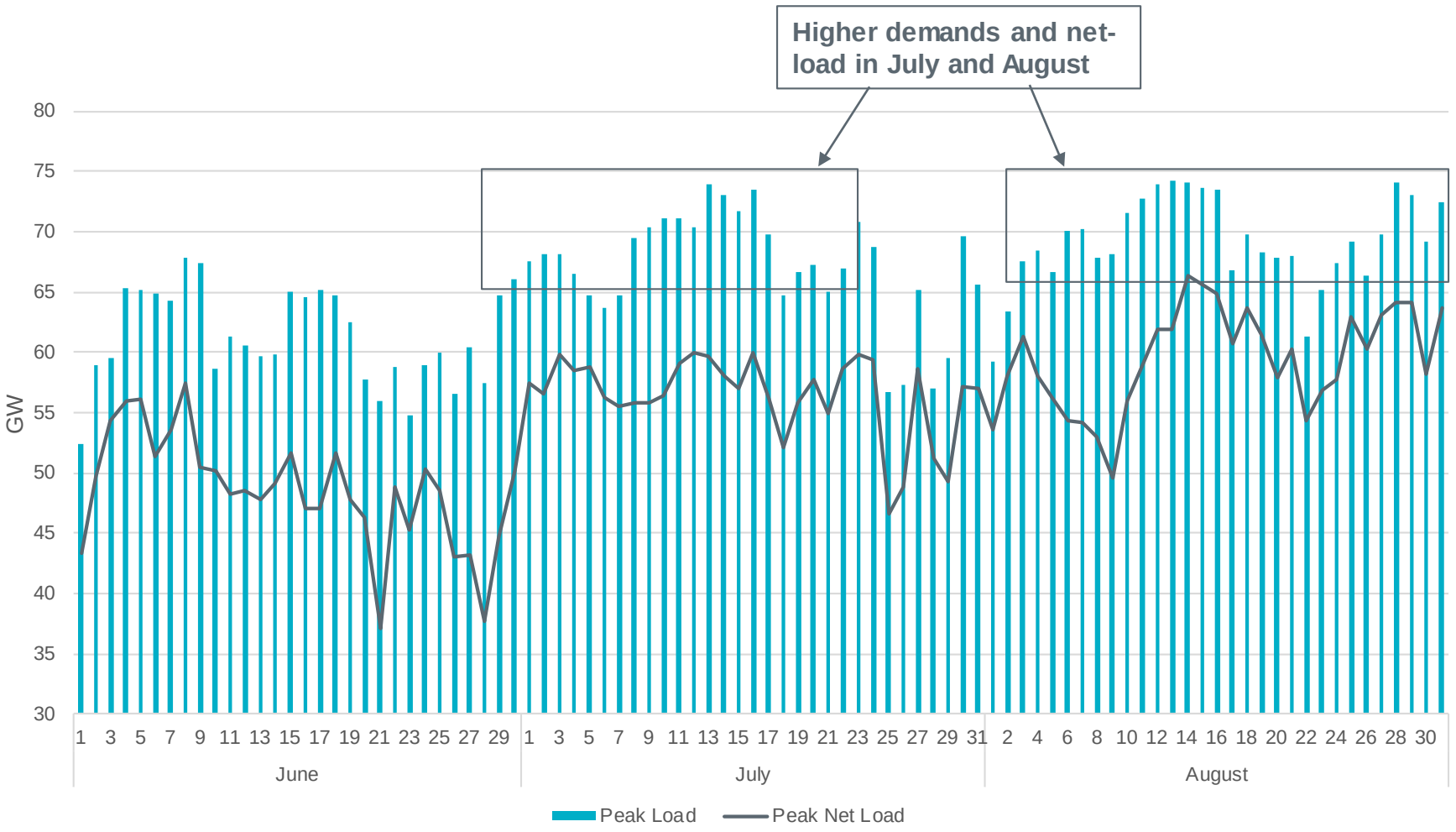
* *Preliminary* value from August release of Demand and Energy 2020 report

Weather

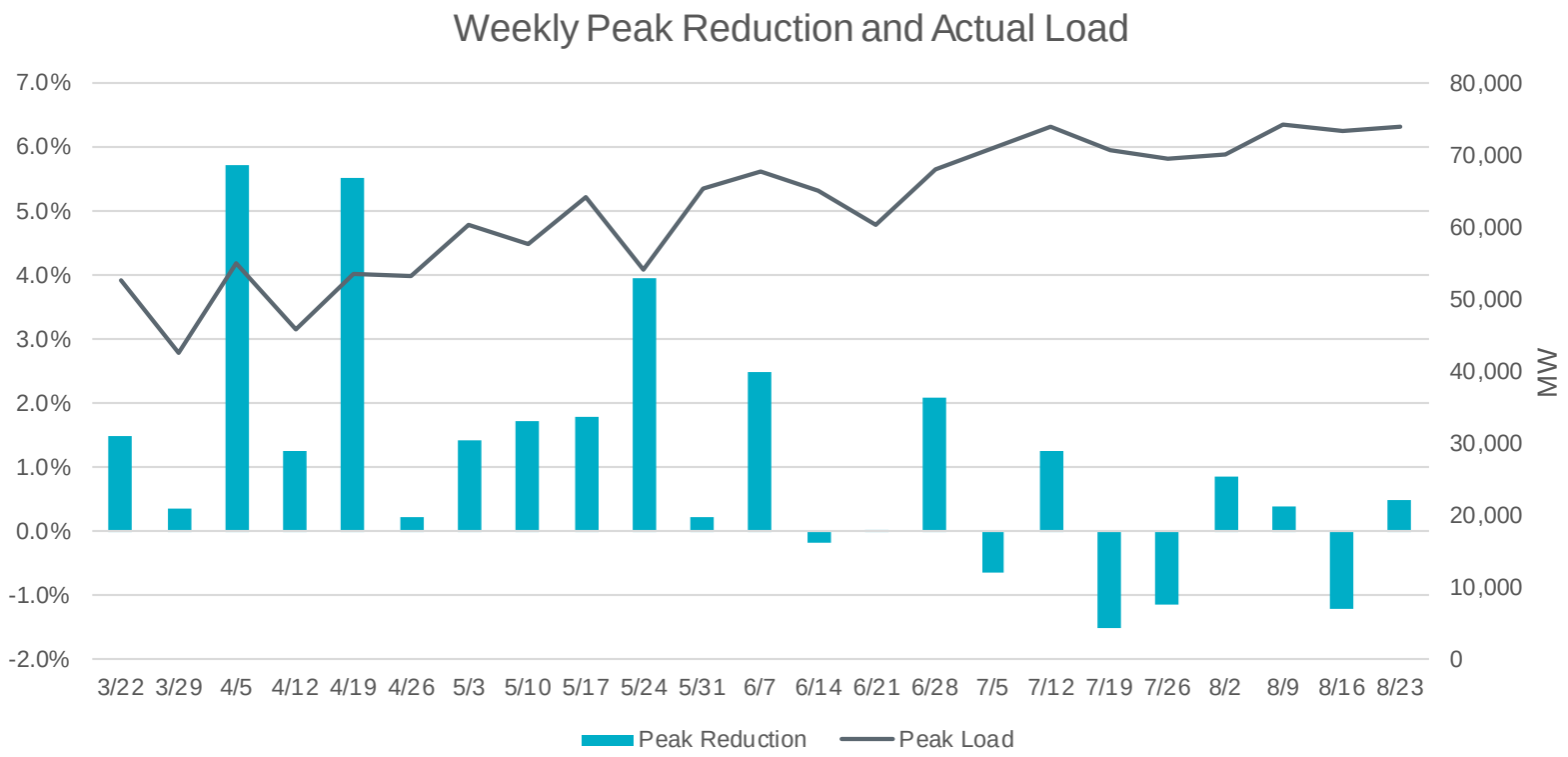
- June-August 2020 was the 7th hottest (mean temperatures) on record dating back to 1895. It was the 3rd hottest since 2000 (2011, 2018)
- Month-to-month changes were small with the strongest above-normal temperature anomalies focused over West Texas each month
- It wasn't an abnormally hot summer for Dallas. Since 2000, Jun-Aug 2020 ranked 13th hottest. DFW recorded the fewest 100-degree days (9) since 2007. (To contrast, Austin experienced the 4th hottest Jun-Aug since 2000)
- The June-August period was the driest statewide since 2011
- The Jun-Aug period as a whole had abundant, above-normal wind. Heat over West Texas is the perfect setup for good wind



Daily Peak Hour Demands



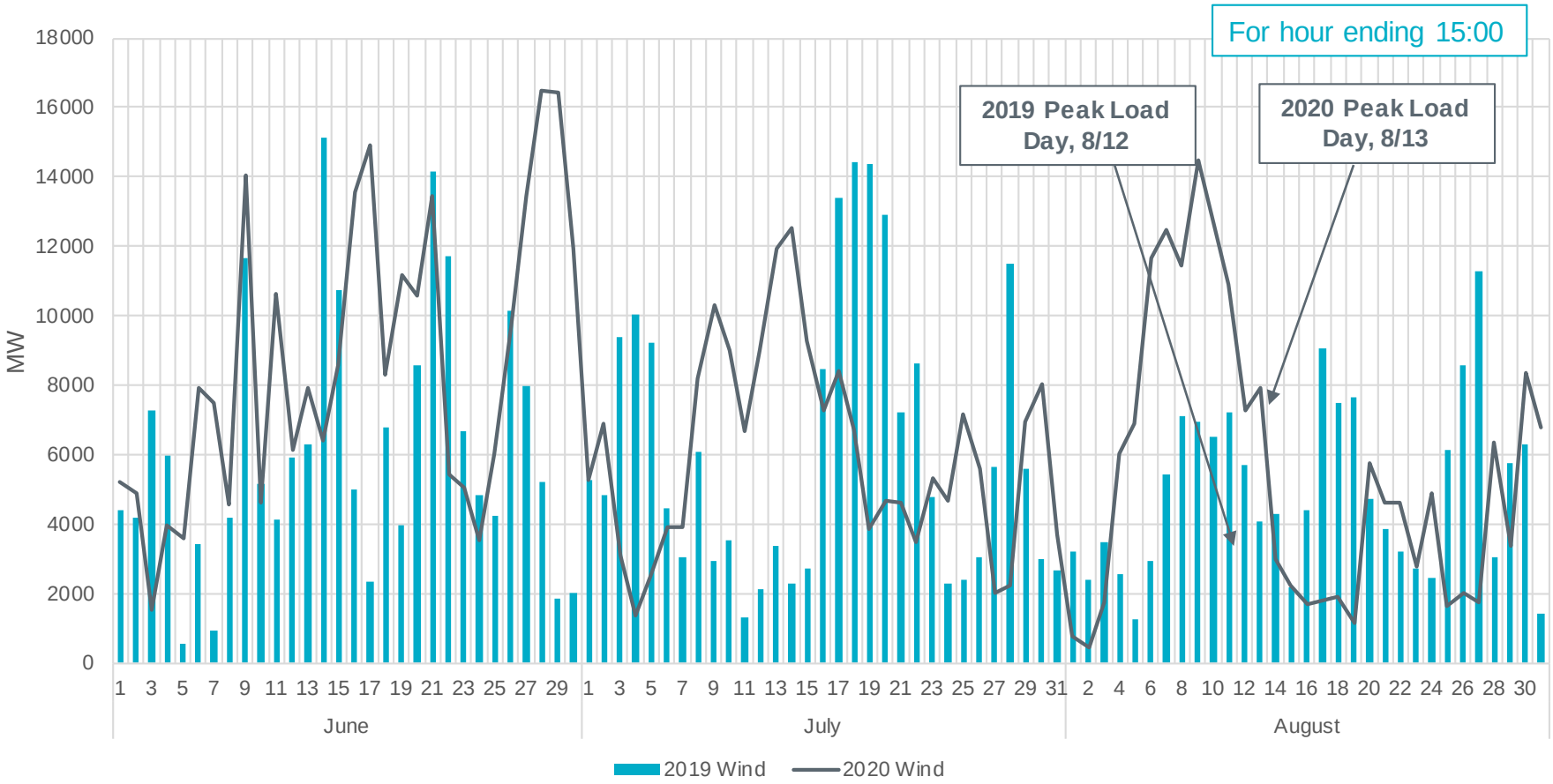
Pandemic Impacts on ERCOT Peak Load



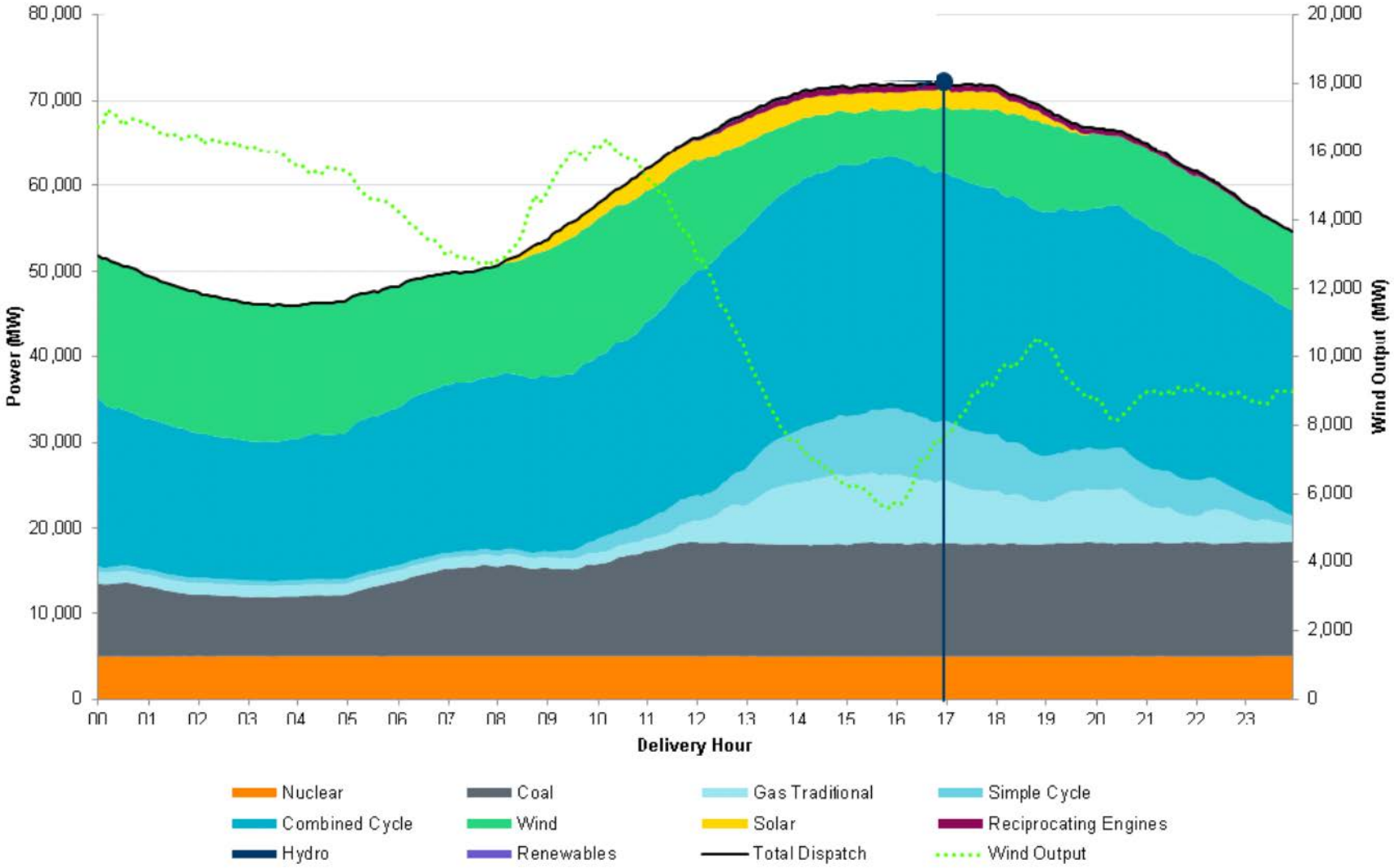
- Peak Demand impacts were the largest in April 2020. They have declined significantly since late June. By the end of the summer there were no discernable impacts due to COVID-19.

Wind Output

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

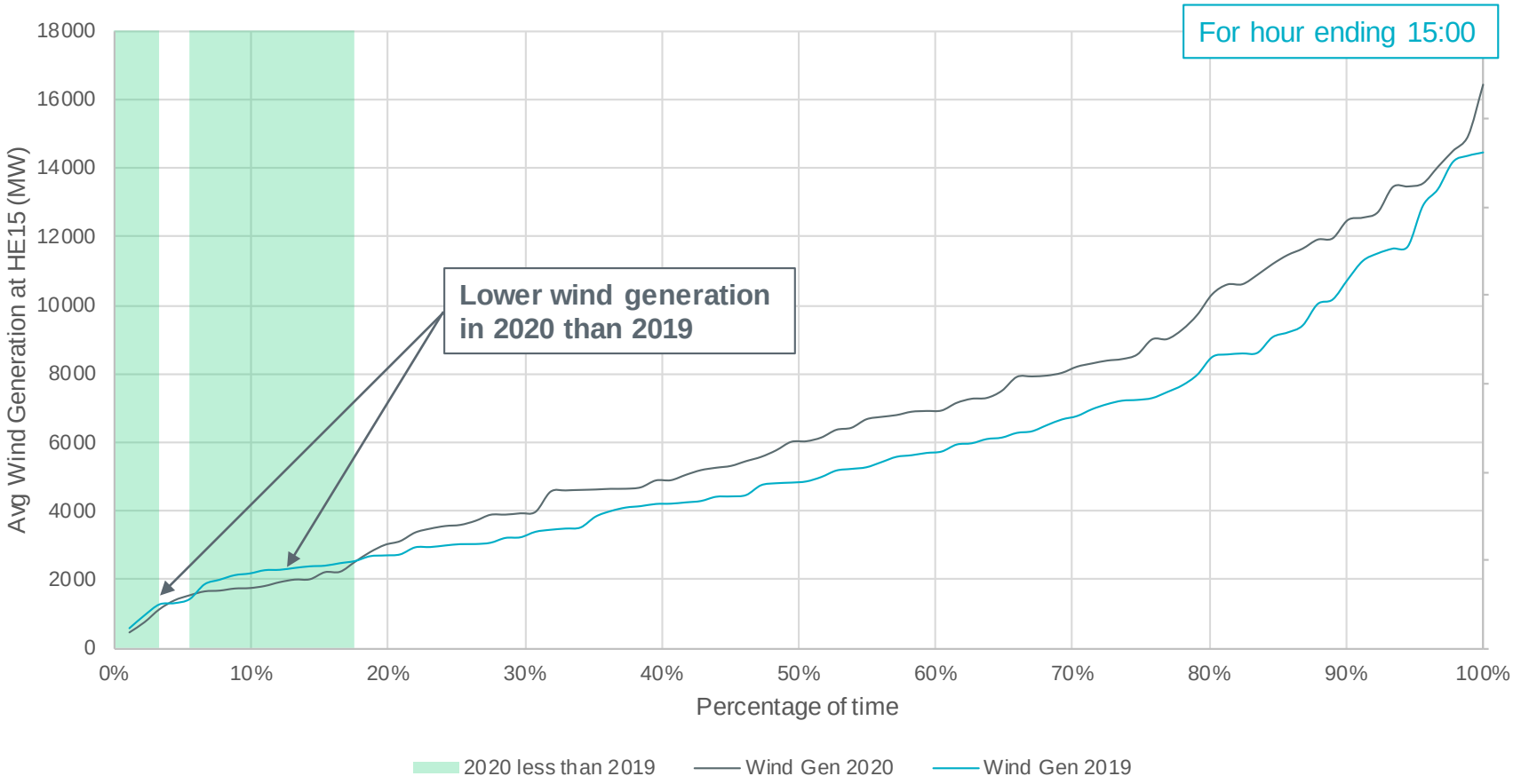


Why Report on Hour Ending 15:00?



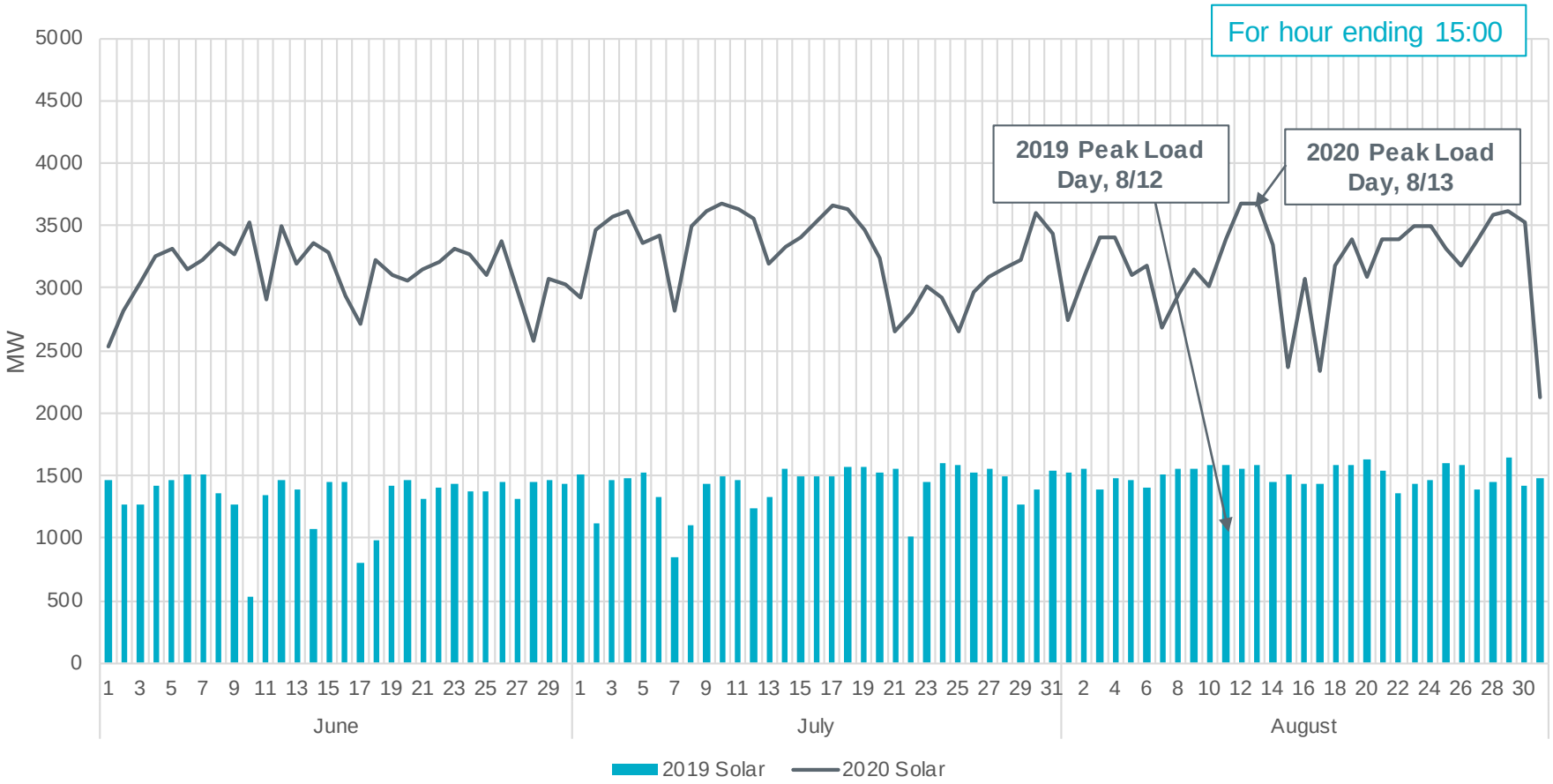
Daily Average Wind Generation

- Although wind generation was generally higher than 2019 due to increase in installed capacity, there were times when the average wind generation at HE15 in Summer 2020 was lower than Summer 2019.



Solar Output

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



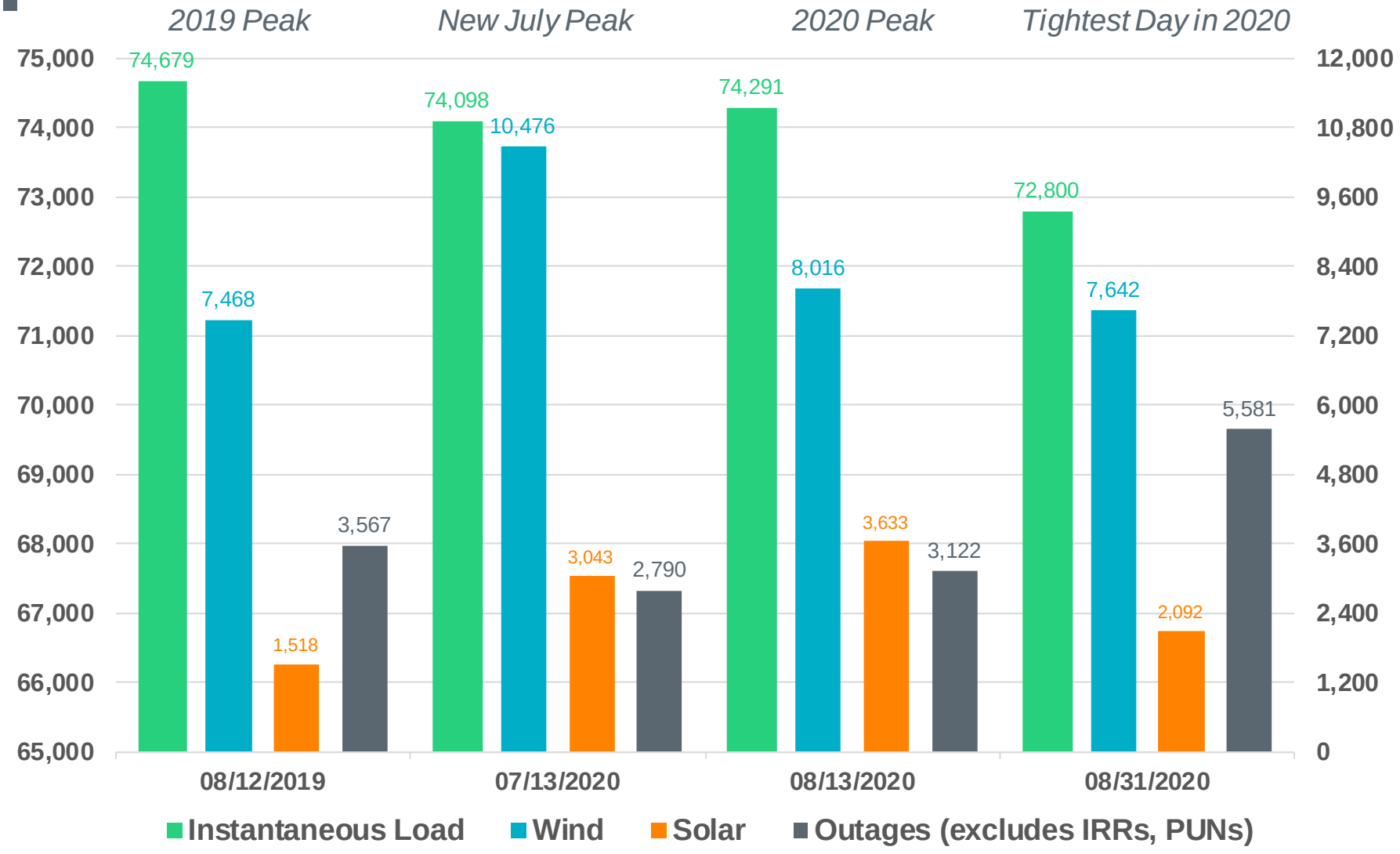
The Summer 2020 Seasonal Assessment of Resource Adequacy (SARA) Values vs. Actuals at Peak Demand

	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 September 15, 2020.

Instantaneous Load, Wind, Solar and Outages at Peak*



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

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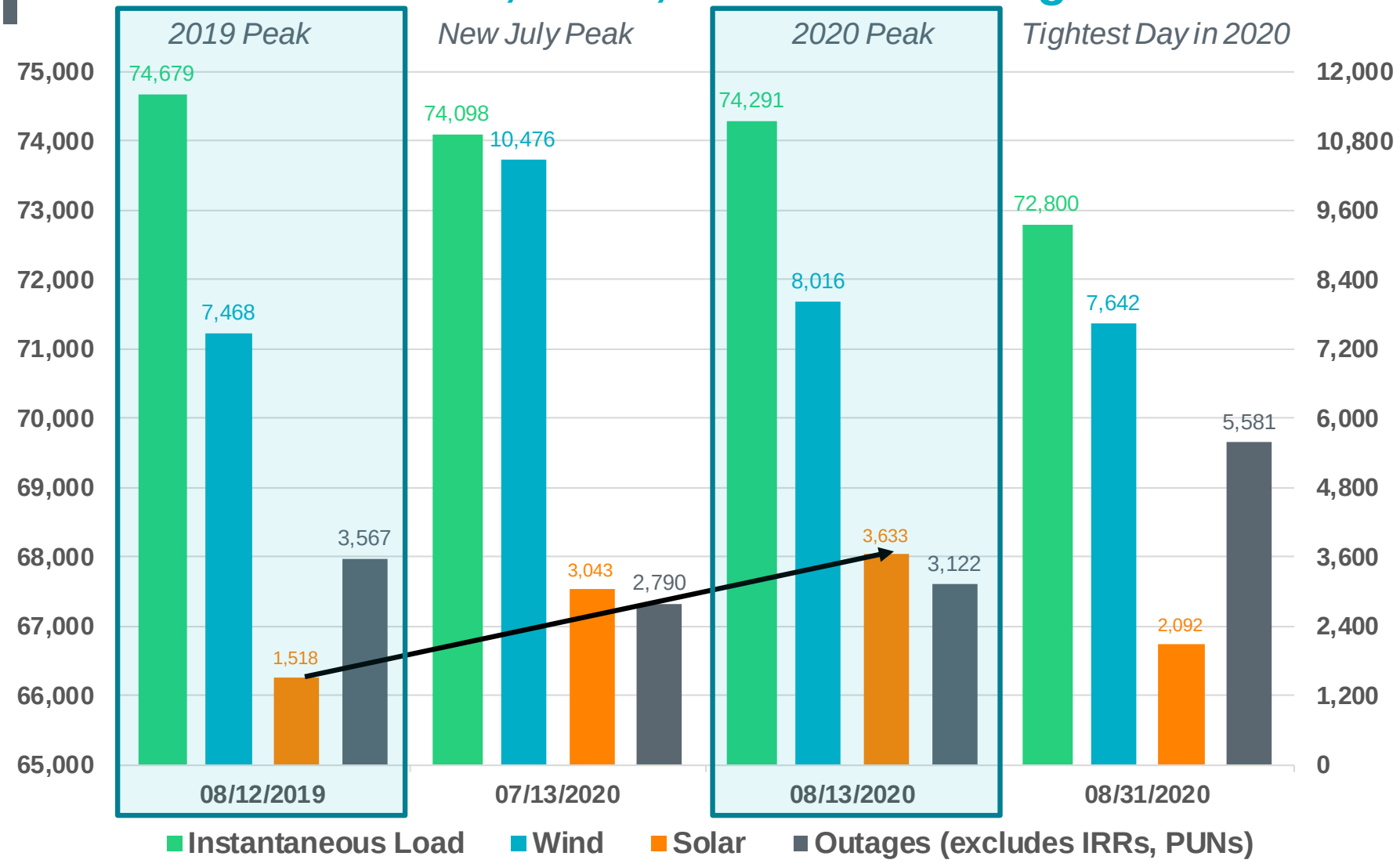

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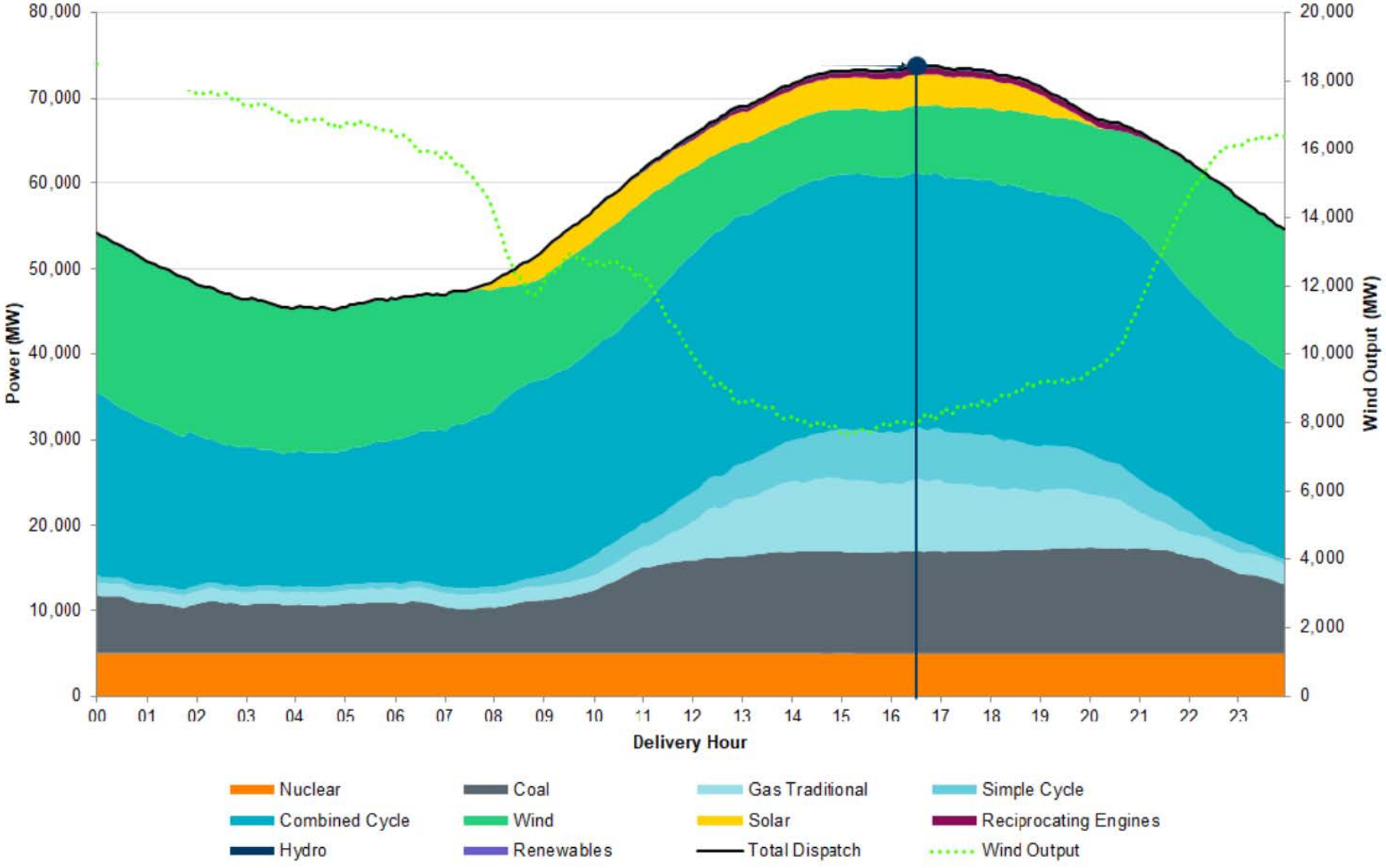
8/13/2020 Dispatch



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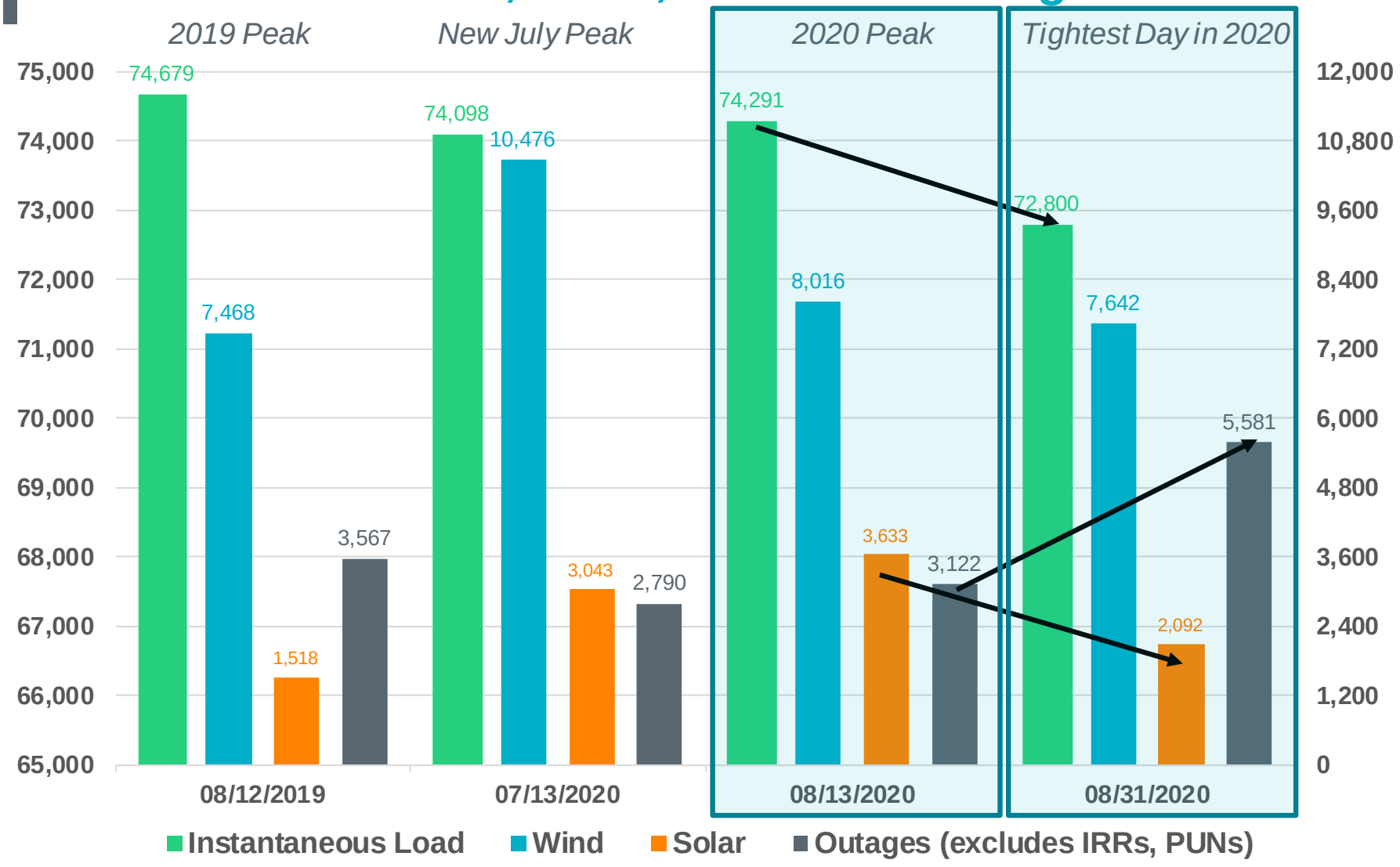

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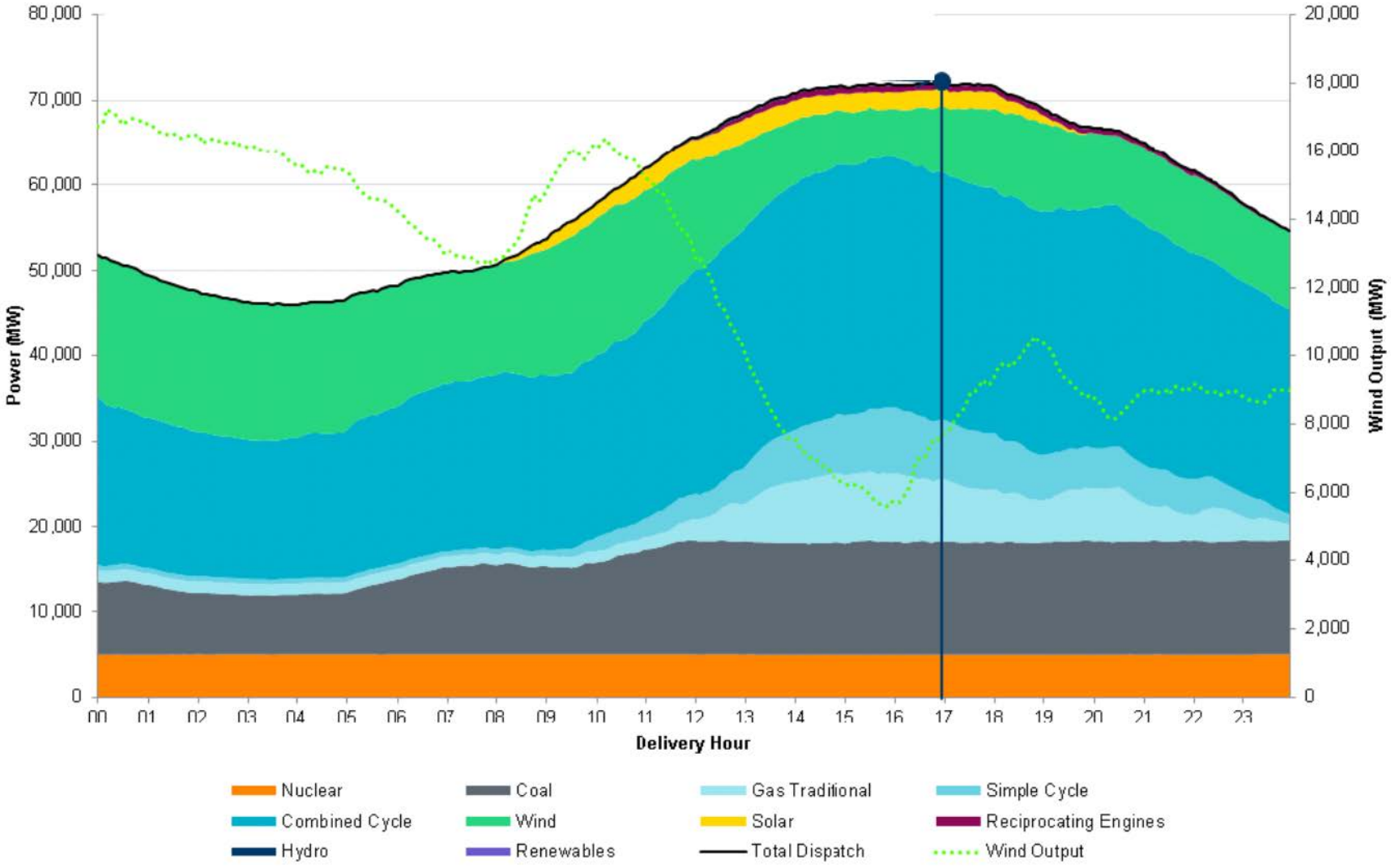
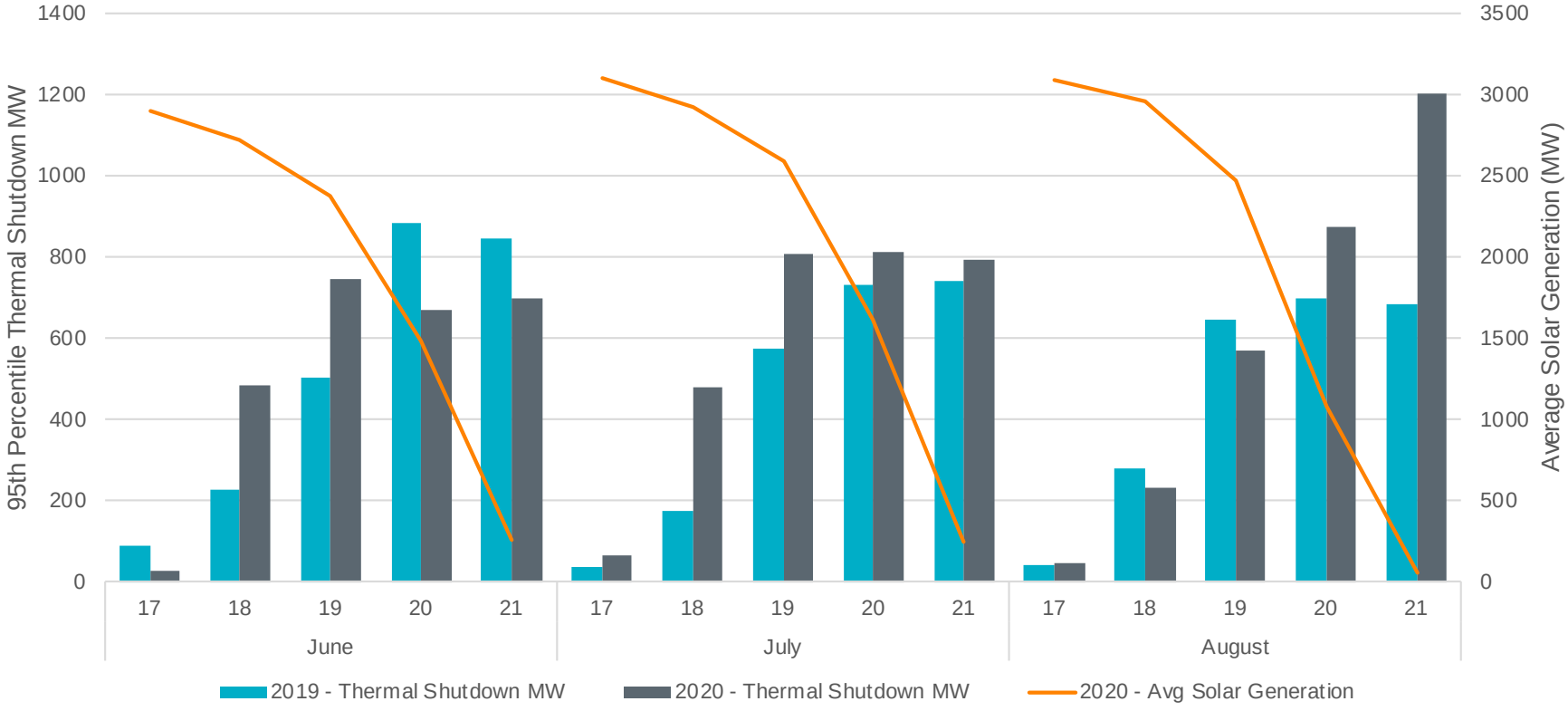
8/31/2020 Dispatch



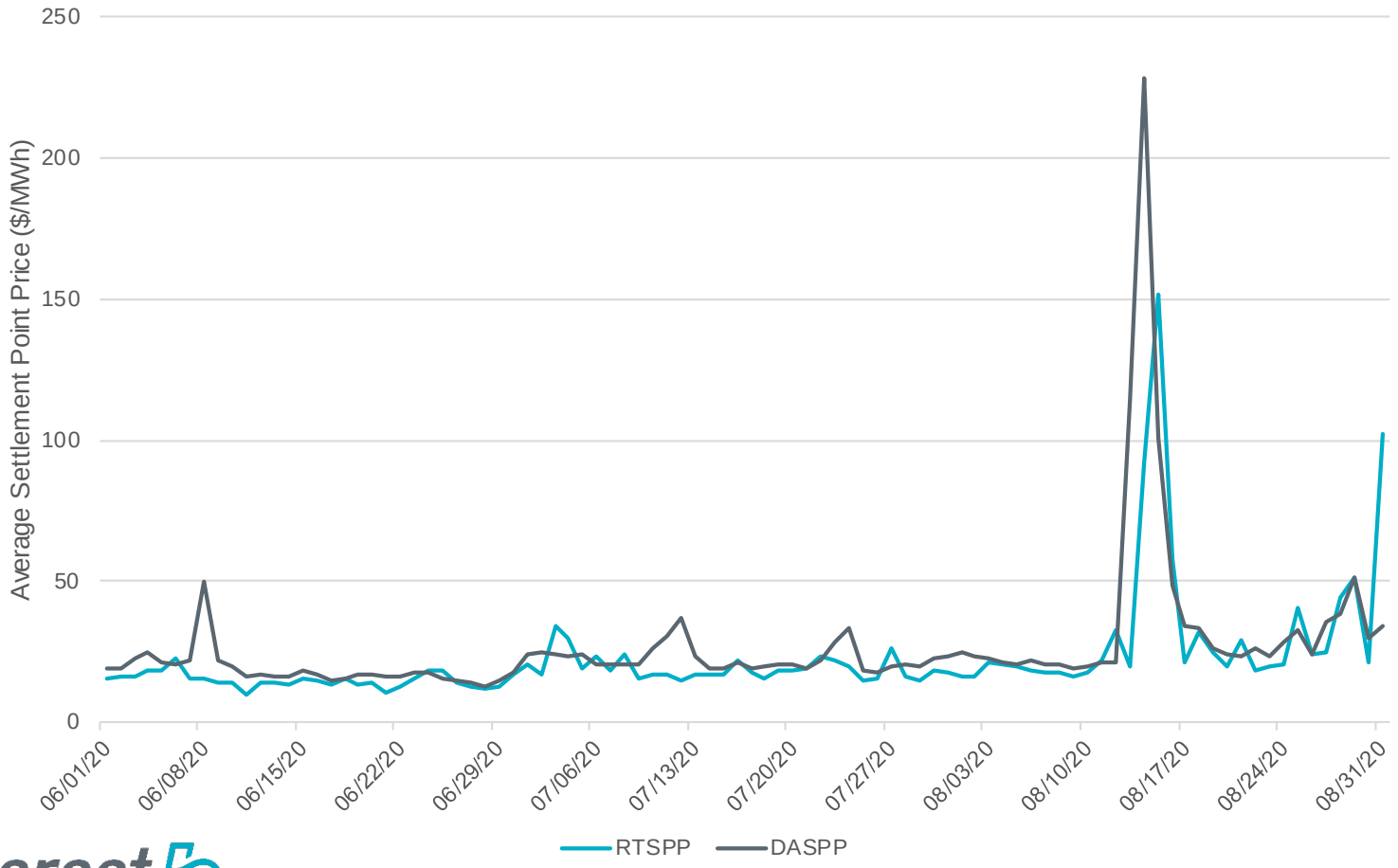
Increase in Thermal Shutdown MWs during sunset

- In 2020, a new phenomenon was observed in which tighter operating conditions and lower operating reserves occurred as solar generation dropped off due to sunset and thermal generation started shutting down after the load peak. These tighter conditions were more pronounced on days with lower total renewable generation during the season.



Daily Unweighted Average DAM and RTM Prices

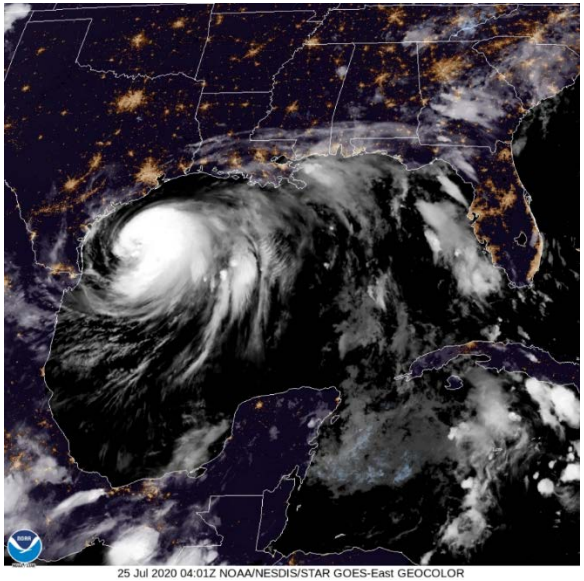
- Day-Ahead and Real-Time price convergence remained within a normal range during the summer.



Hurricanes in Texas Gulf in Summer

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 twenty 138 kV lines and ten 69 kV lines experienced storm-related damage.
  - A couple of the 138 kV outages were significant and played a role in the August 4 transmission emergency.



Hurricane Laura (Landfall on August 27, 2020)

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

Two Transmission Emergencies in Valley

August 4th

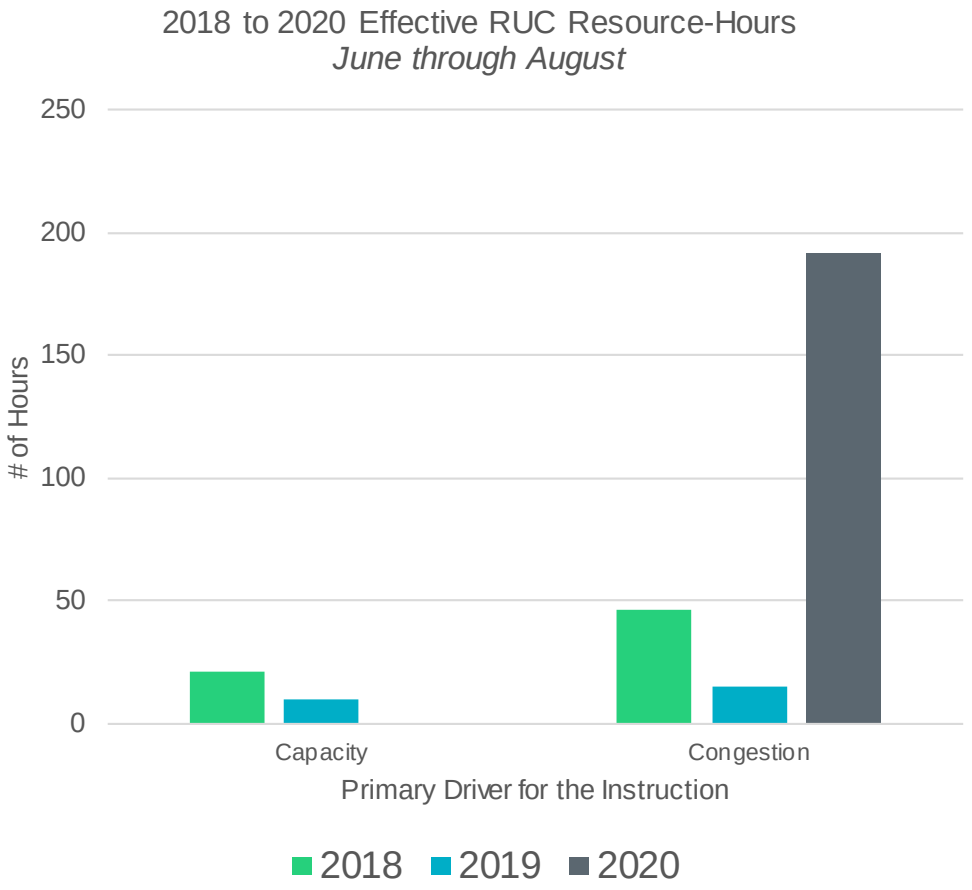
- Multiple 138 kV transmission lines were on forced outage due to the Hurricane Hanna.
- Severe post-contingency overloads on 138 kV transmission system with Mitigation Plan ready for several days after Hanna.
- Received 25 MW of emergency energy from CENACE.

September 1st

- Generators were on a forced outage during a timeframe with highest Valley loads all summer.
- Basecase 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.

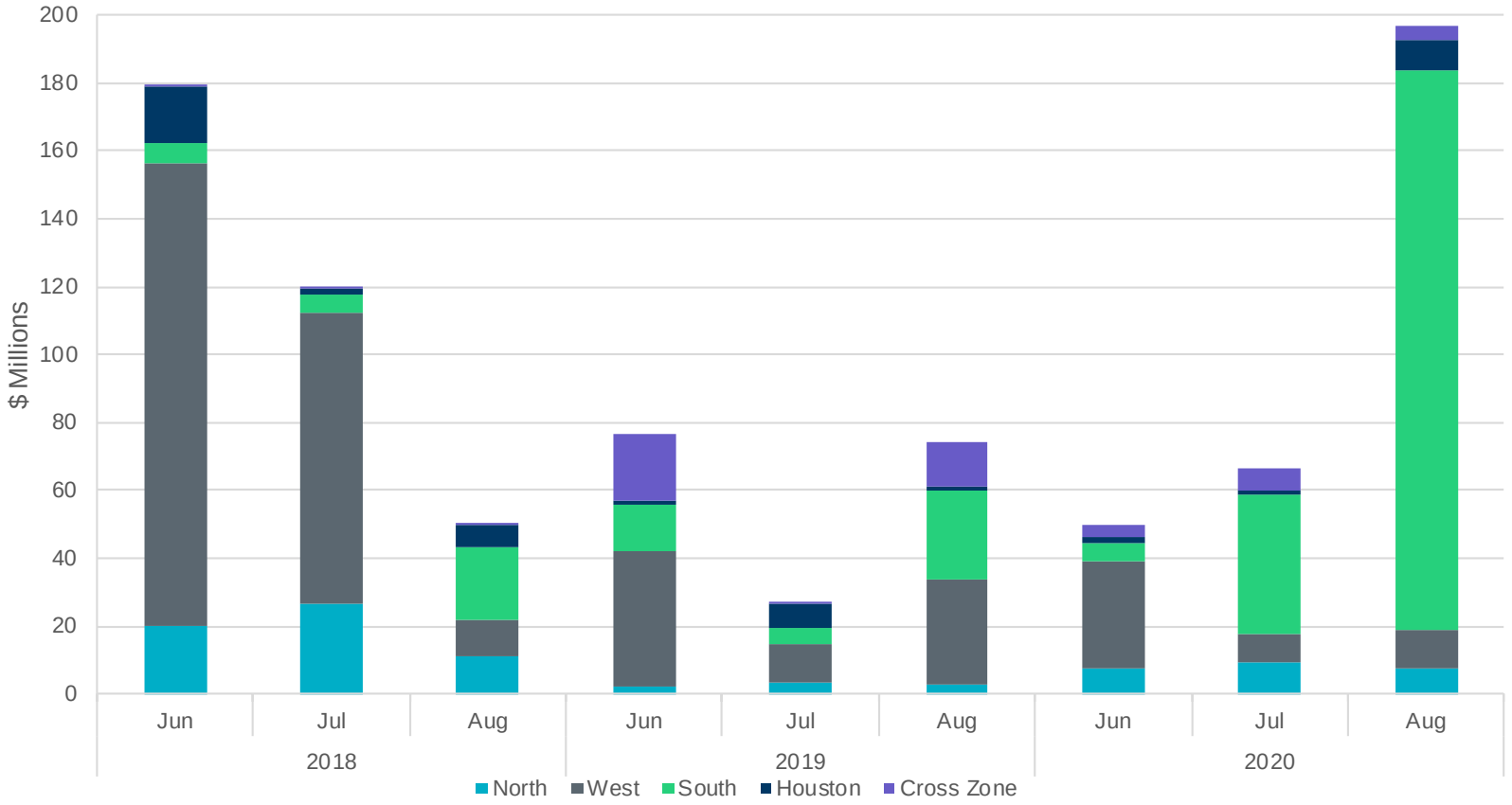
The number of RUCs in 2020 increased primarily due to Hurricane Hanna

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

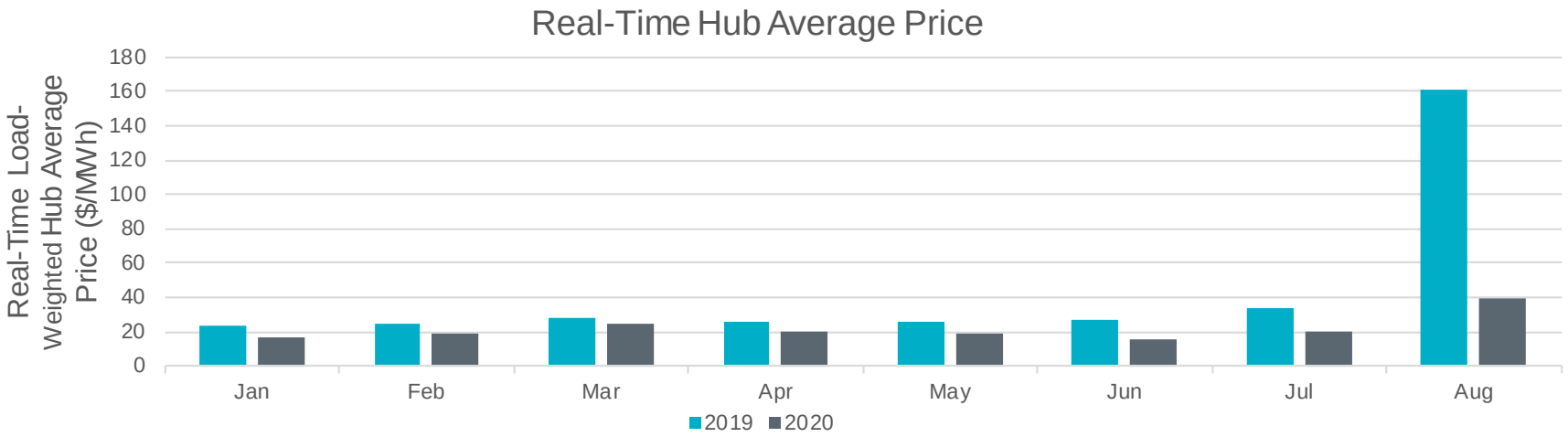


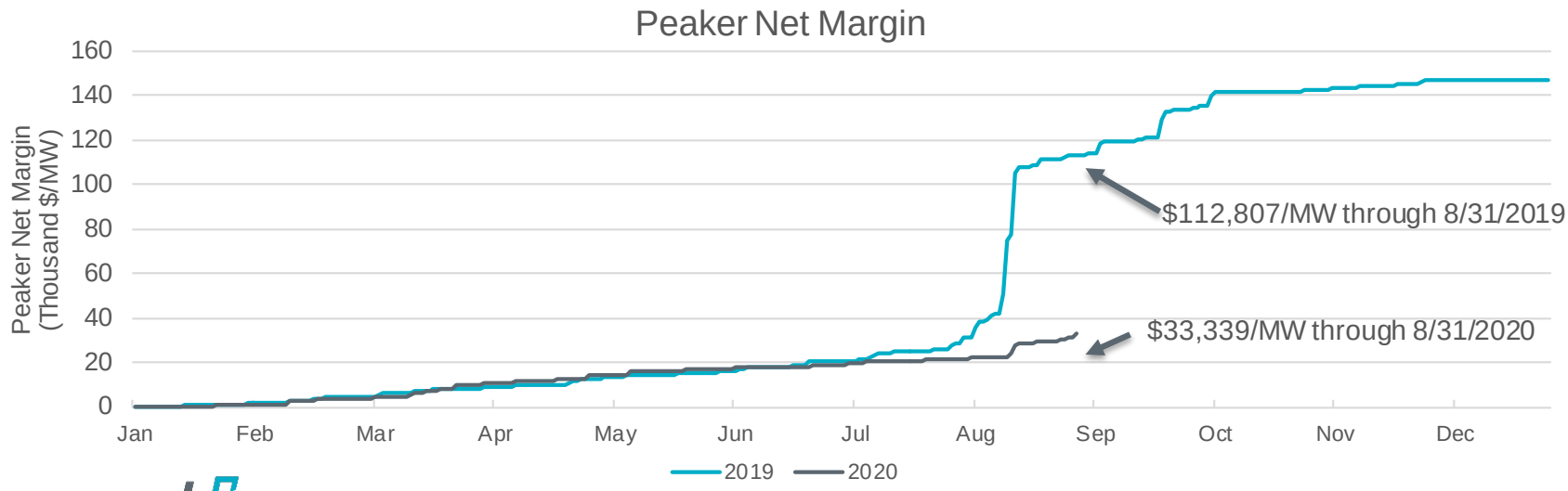
Real-Time Congestion Rent by Zone

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



Real-Time Hub Price and Peaker Net Margin





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Questions