



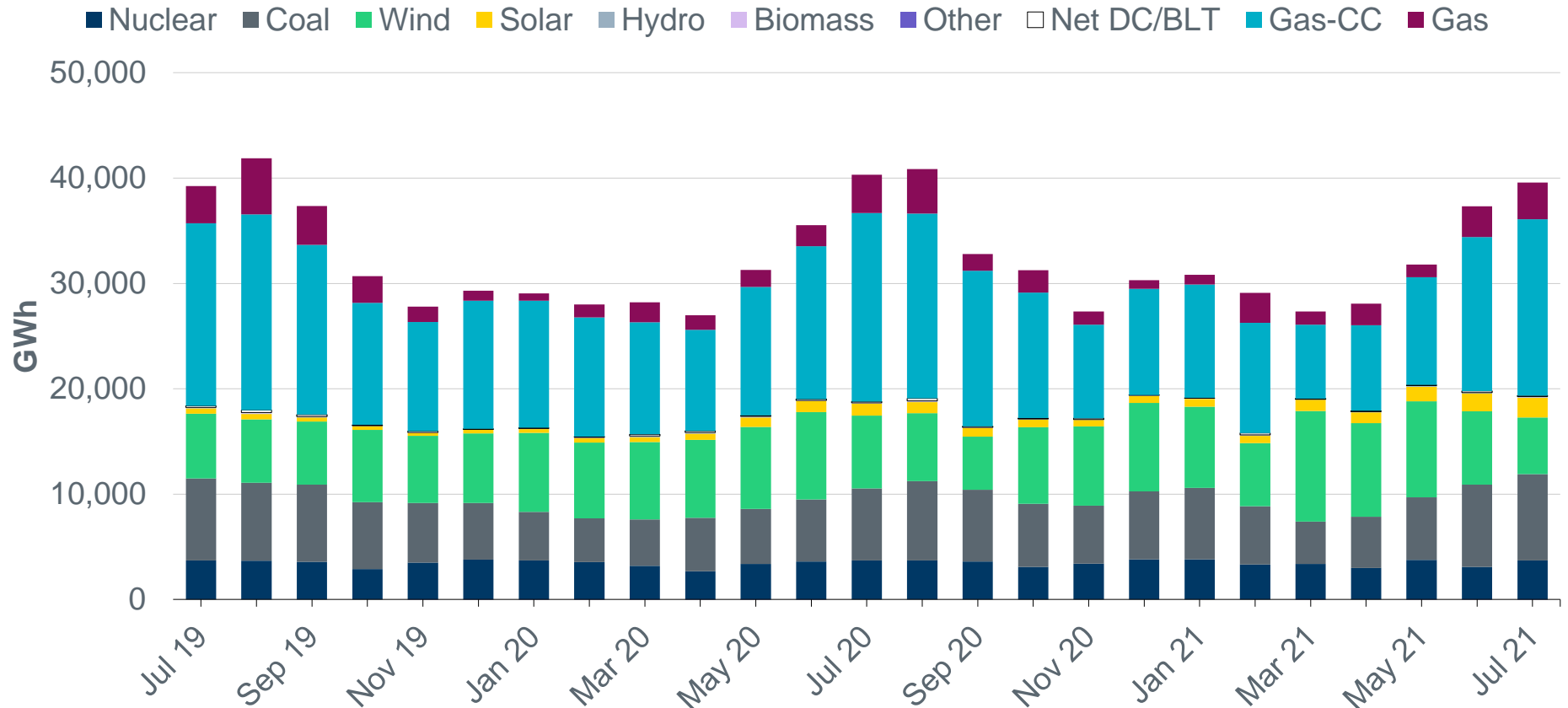
ERCOT Monthly Operational Overview (July 2021)

ERCOT Public
August 19, 2021

Notifications and Records

- ERCOT set a maximum peak demand of 73,098 MW* in July 2021, which is 1,246 MW less than the July 2020 demand of 74,344 MW.
- ERCOT issued 9 notifications:
 - 8 OCNs for a potential reserve capacity shortages.
 - 1 Watch for failure of the SCED process.

Monthly energy generation decreased by 1.9% year-over-year to 39,564 GWh in July 2021, compared to 40,318 GWh in July 2020

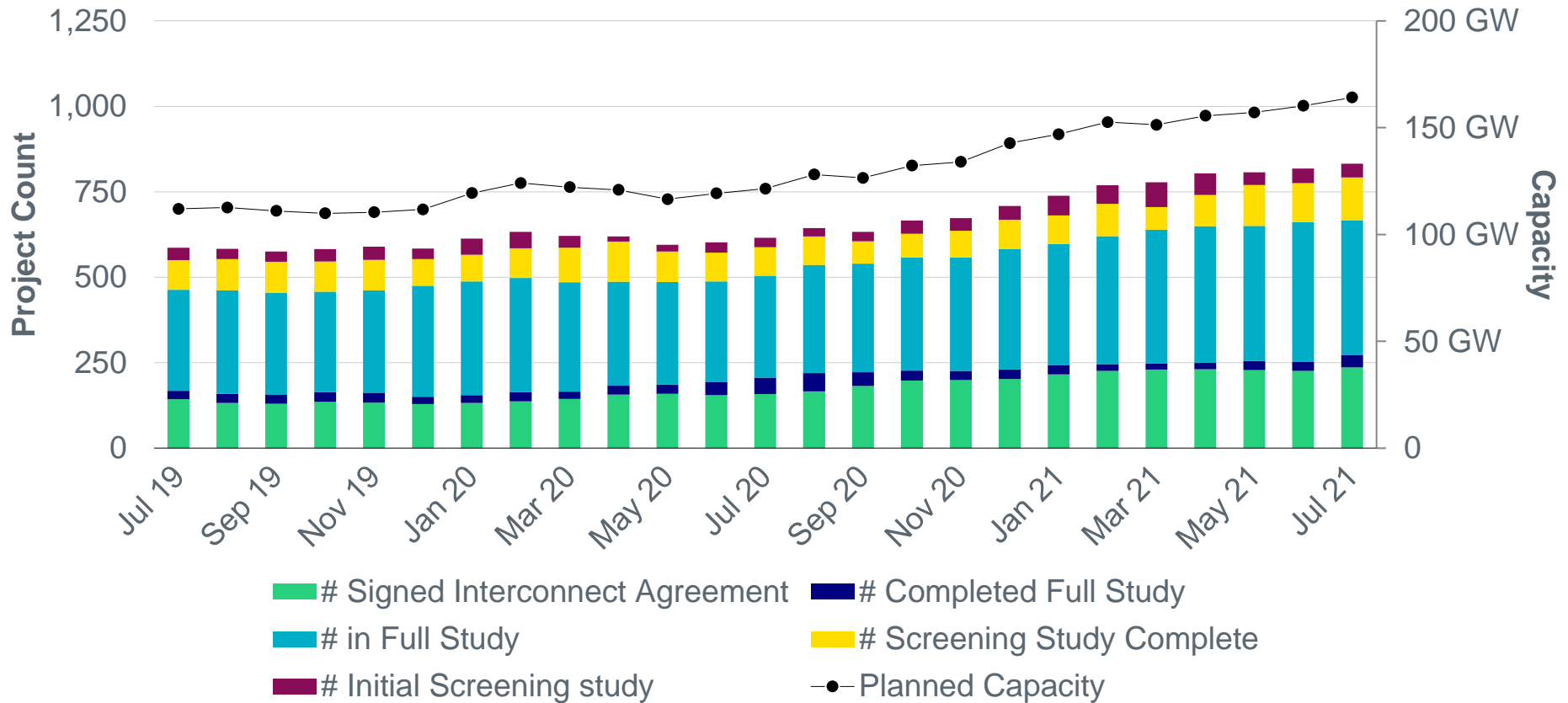


Data for latest two months are based on preliminary settlements.



Generation Interconnection activity by project phase

(Excludes capacity associated with Projects designated as Inactive per Planning Guide Section 5.7.6)

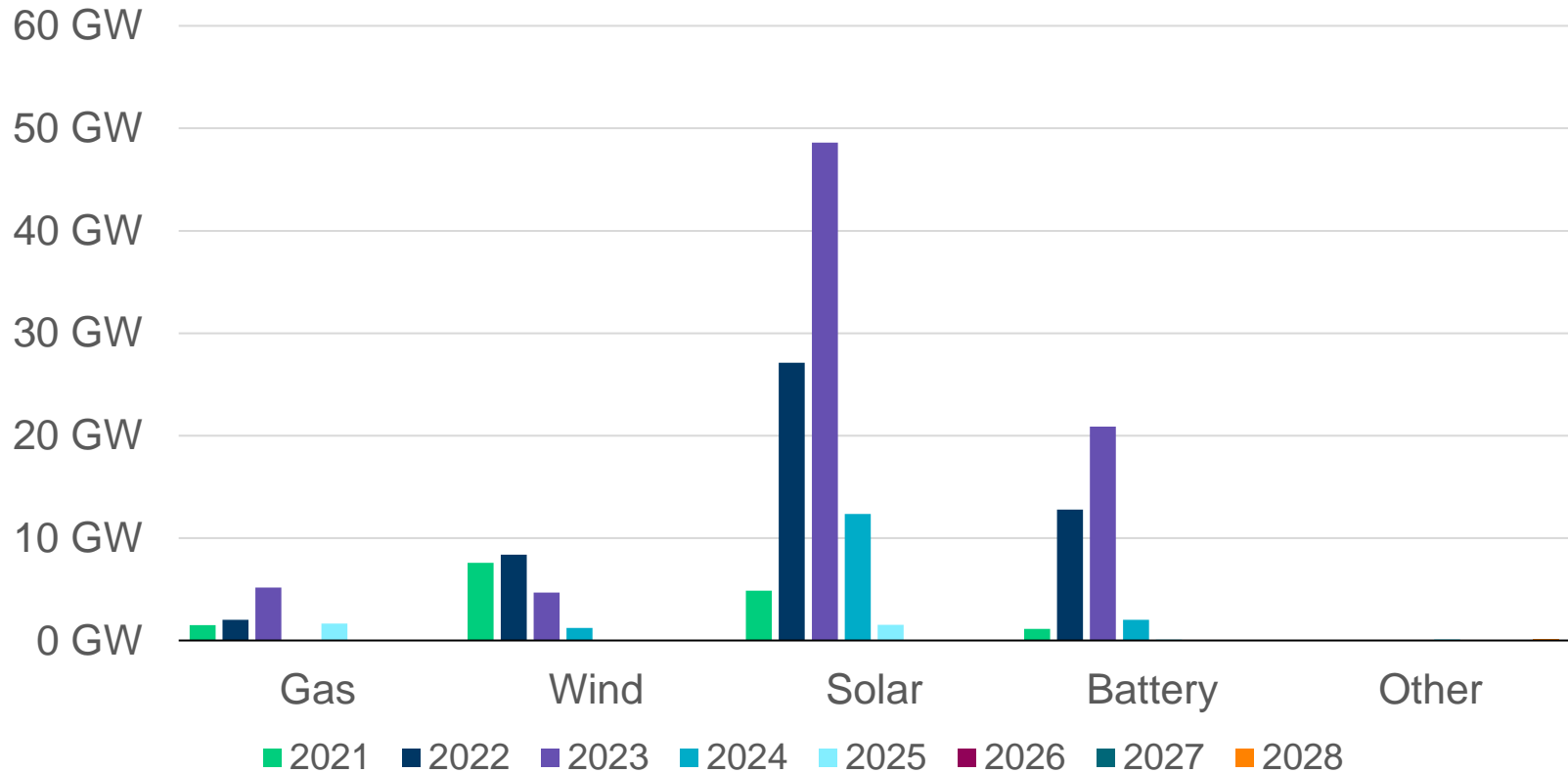


A break-out by fuel type can be found in the monthly Generator Interconnection Status (GIS) reports available on the ERCOT Resource Adequacy Page: <http://www.ercot.com/gridinfo/resource>



Interconnection Queue Capacity by Fuel Type

Queue totals: Solar 94 GW (57.6%), Wind 22 GW (13.4%), Gas 10 GW (6.3%), Battery 37 GW (22.5%)
(Excludes capacity associated with Projects designated as Inactive per Planning Guide Section 5.7.6)

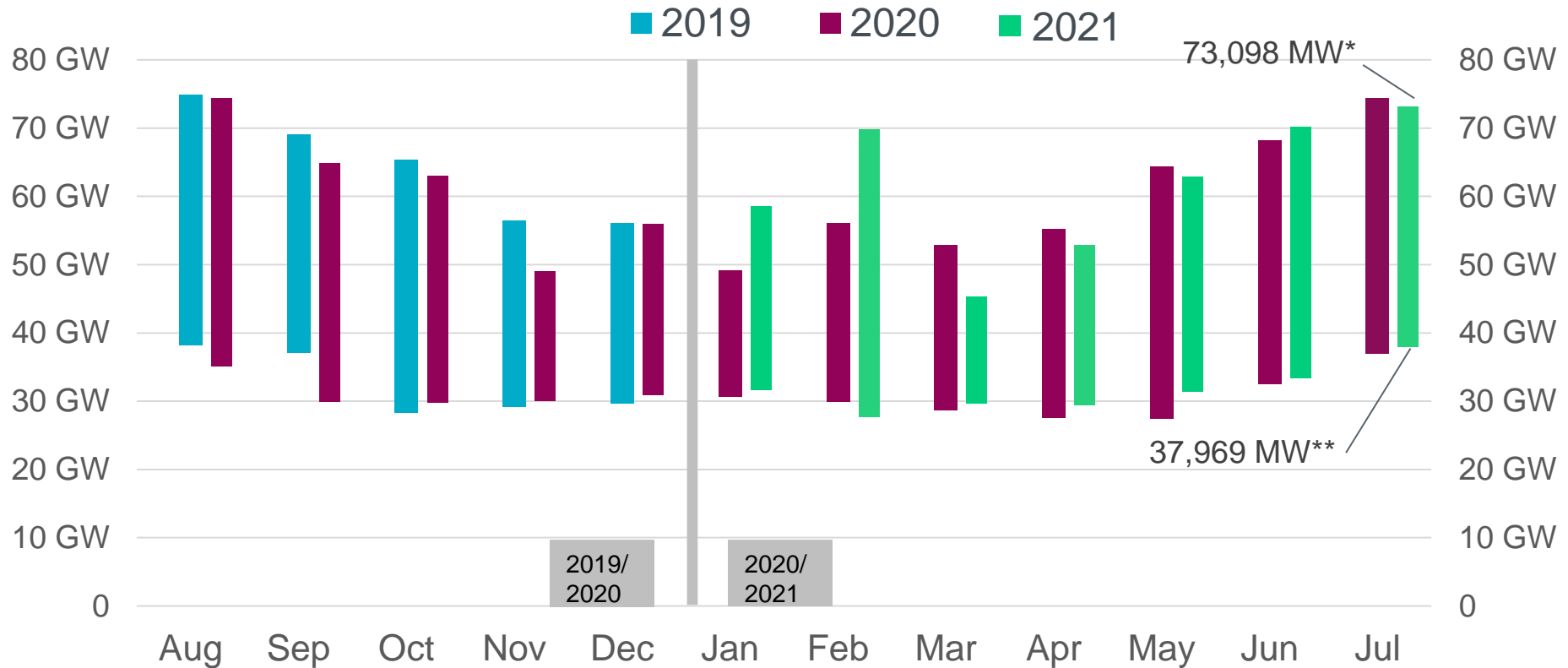


A break-out by zone can be found in the monthly Generator Interconnection Status (GIS) reports available on the ERCOT Resource Adequacy Page: <http://www.ercot.com/gridinfo/resource>

Planning Summary

- ERCOT was tracking 832 active generation interconnection requests totaling 164,105 MW as of July 31. This includes 94,468 MW of solar, 21,934 MW of wind, 36,954 MW of battery, and 10,399 MW of gas projects; 62 projects were categorized as inactive, up from 61 inactive projects in June.
- ERCOT is currently reviewing proposed transmission improvements with a total estimated cost of \$1,161.36 Million as of July 31, 2021.
- Transmission Projects endorsed in 2021 total \$603.95 Million as of July 31, 2021.
- All projects (in engineering, routing, licensing and construction) total approximately \$7.44 Billion as of June 1, 2021.
- Transmission Projects energized in 2021 total about \$999.2 Million as of June 1, 2021.

ERCOT set a maximum peak demand of 73,098 MW* in July 2021, which is 1,246 MW less than the July 2020 demand of 74,344 MW



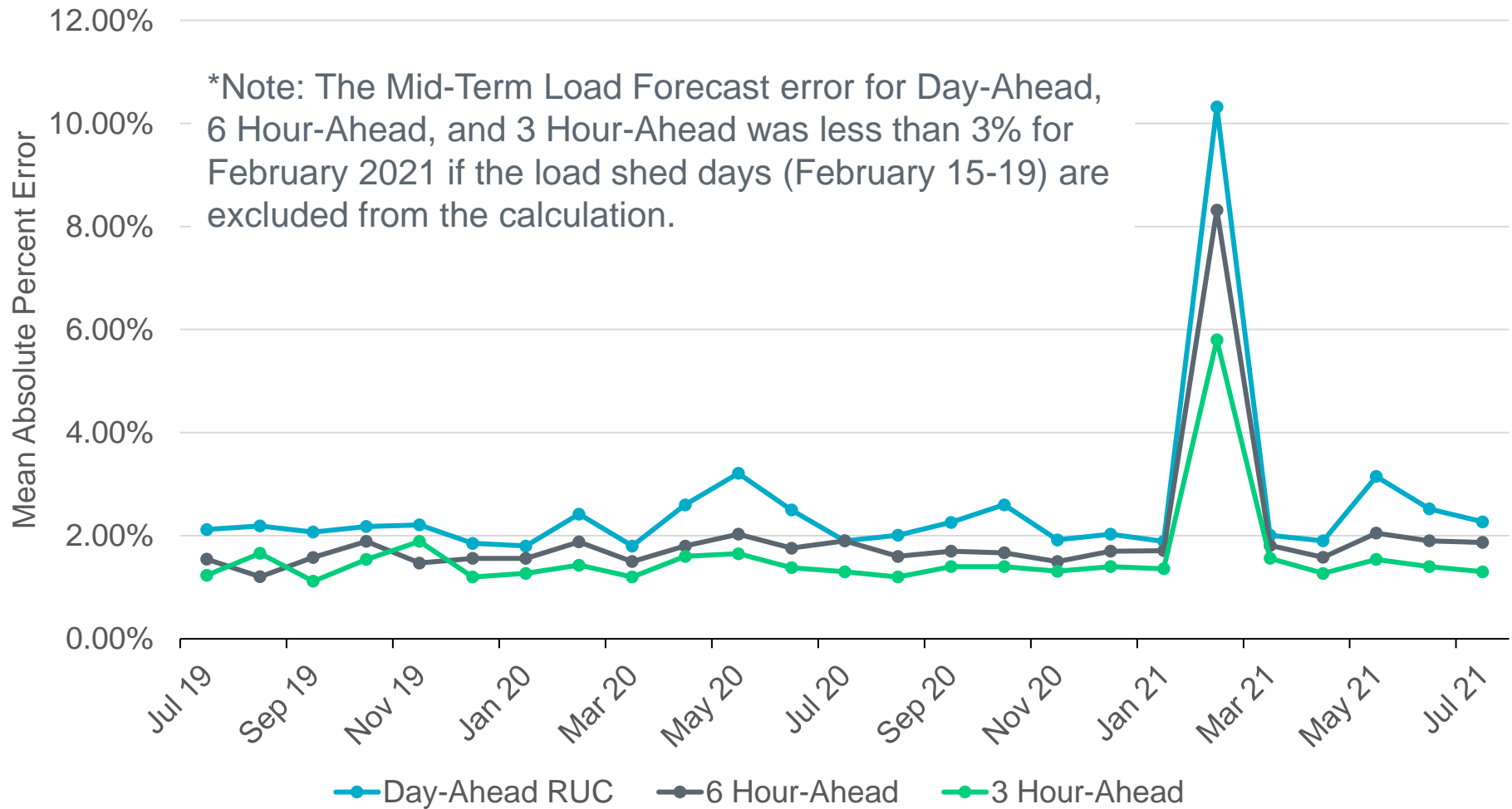
*Based on the maximum net system hourly value from August release of Demand and Energy 2021 report.

**Based on the minimum net system 15-minute interval value from August release of Demand and Energy 2021 report.

Data for latest two months are based on preliminary settlements.



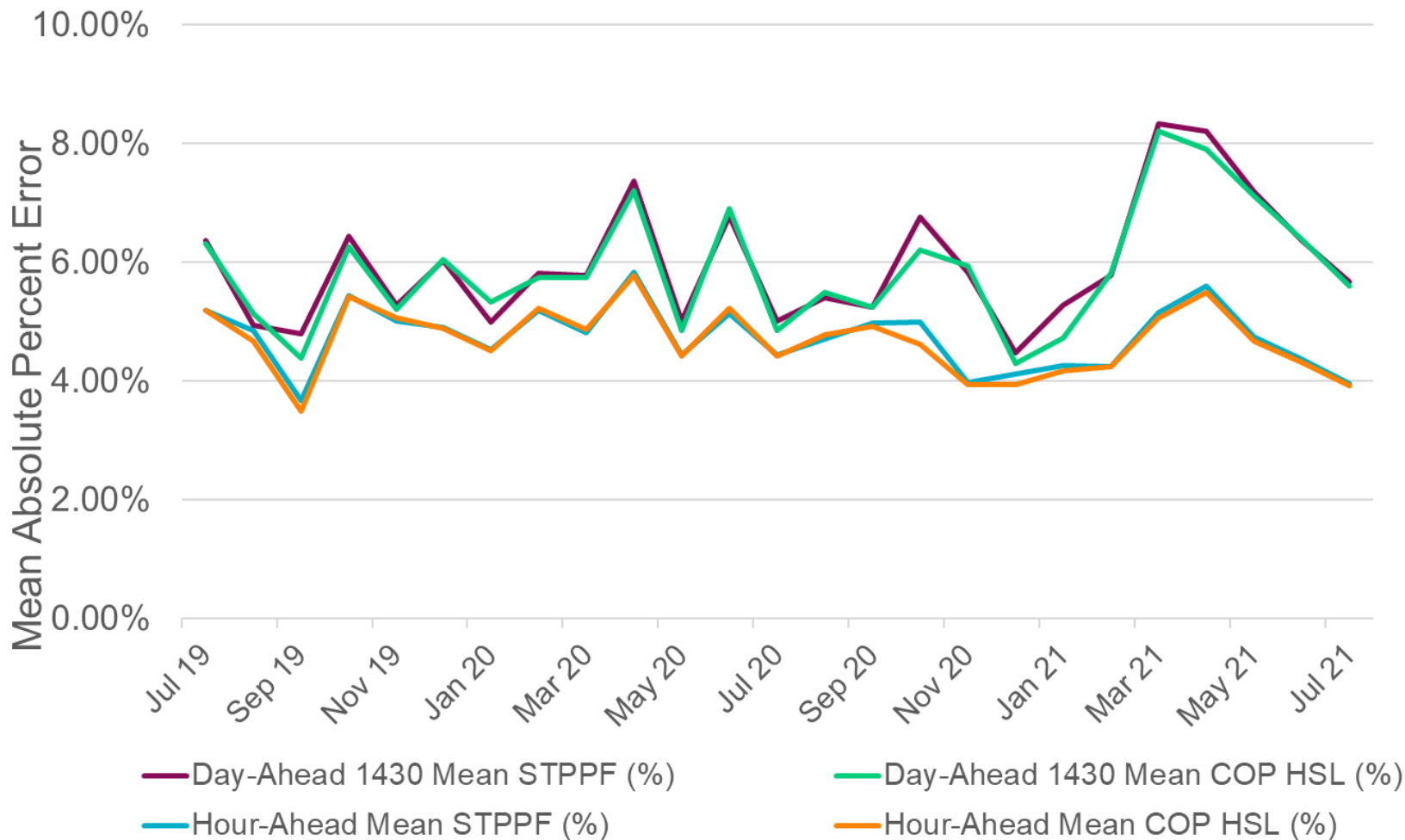
Mid-Term Load Forecast Performance



The Mid-Term Load Forecast is an hourly forecast that looks 7 days into the future



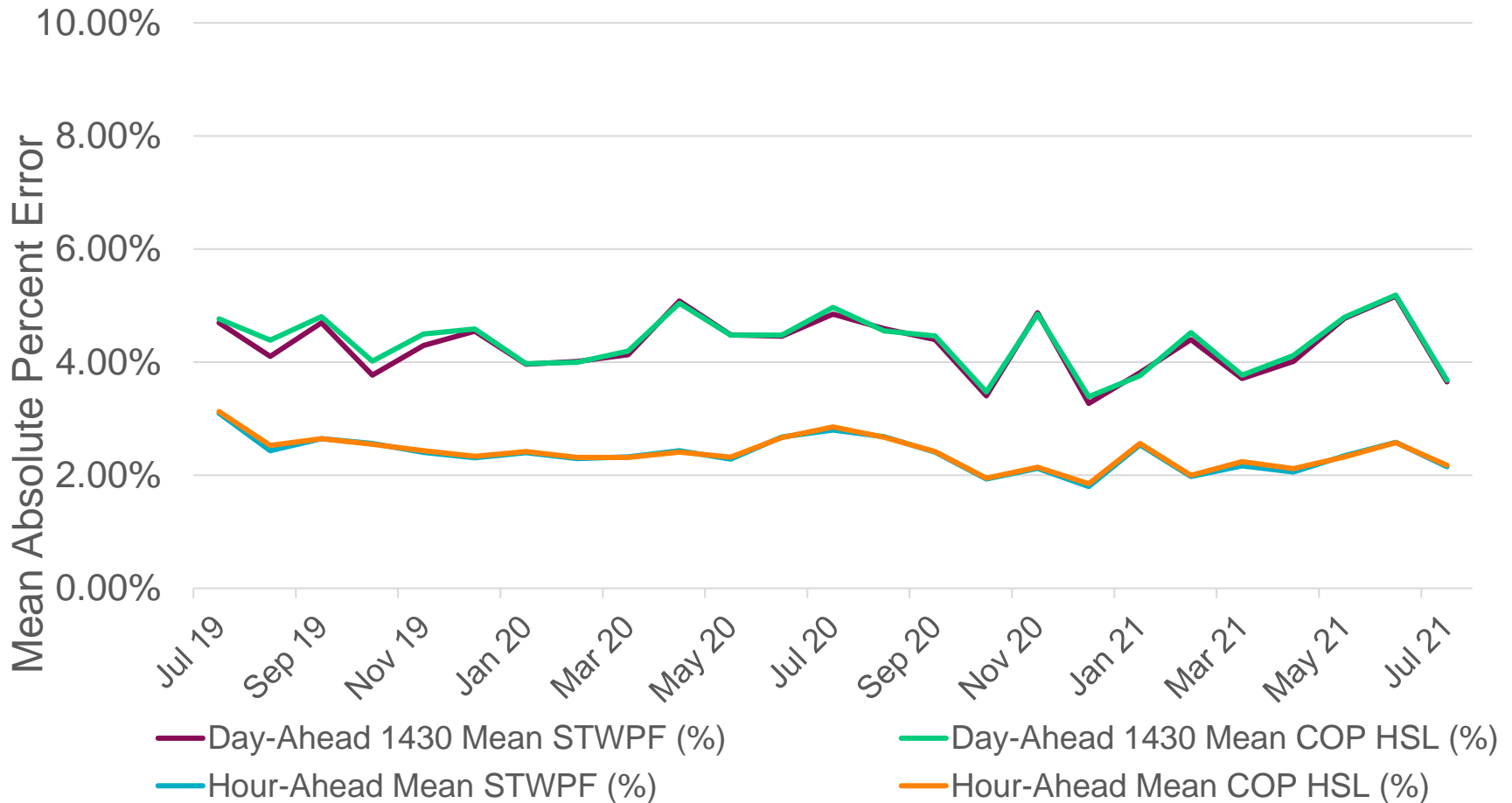
Solar Forecast Performance



The Short-Term Photovoltaic Power Forecast (STPPF) is an ERCOT-produced hourly 50% probability of exceedance forecast of the generation in MWh per hour from each PVGR.



Wind Forecast Performance

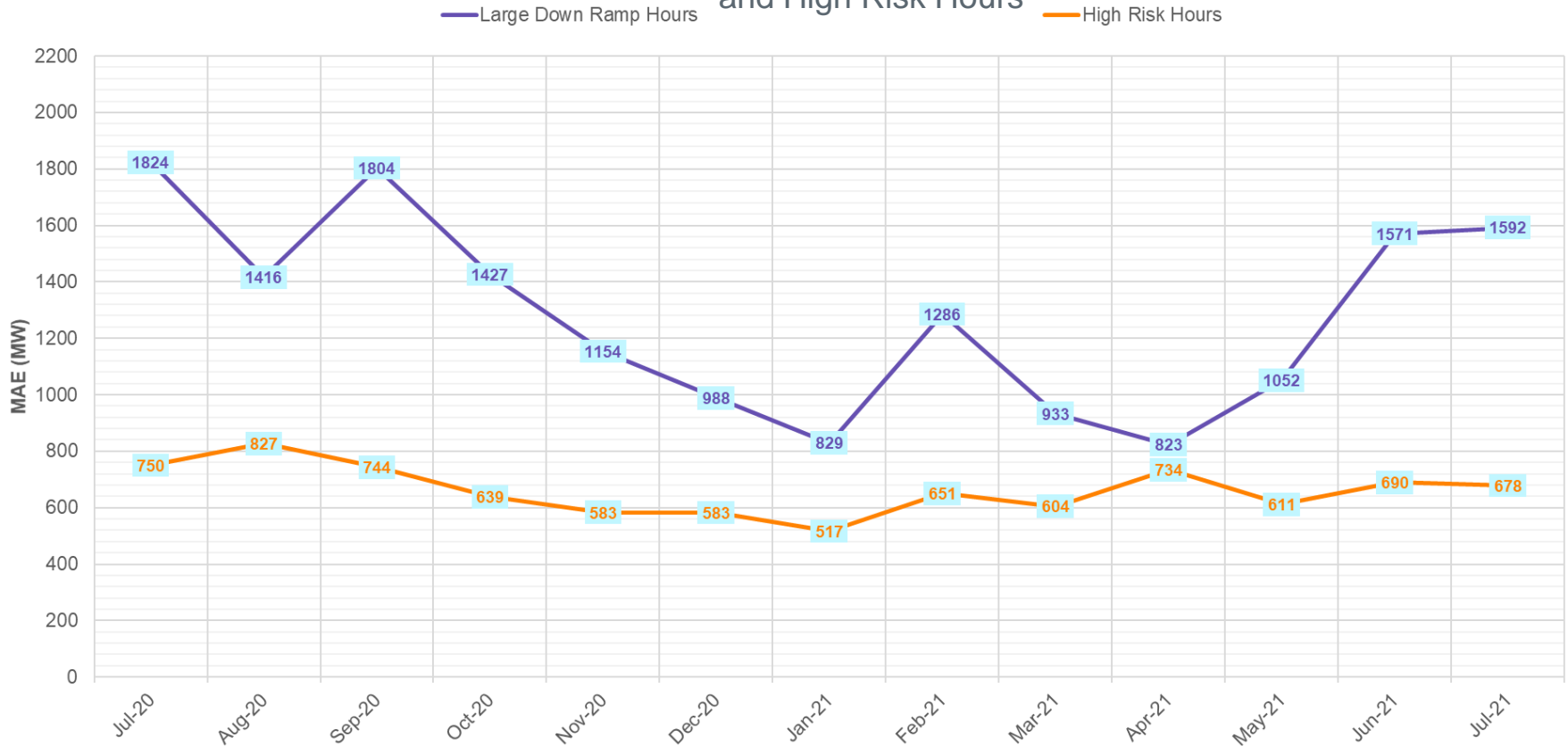


The Short-Term Wind Power Forecast (STWPF) is an ERCOT produced hourly 50% probability of exceedance forecast of the generation in MWh per hour from each Wind Generation Resource.



Hour-Ahead Wind Forecast Performance

Hour-Ahead Mean Absolute Error (MAE) During Large Down Ramp (> 2000 MW) and High Risk Hours*

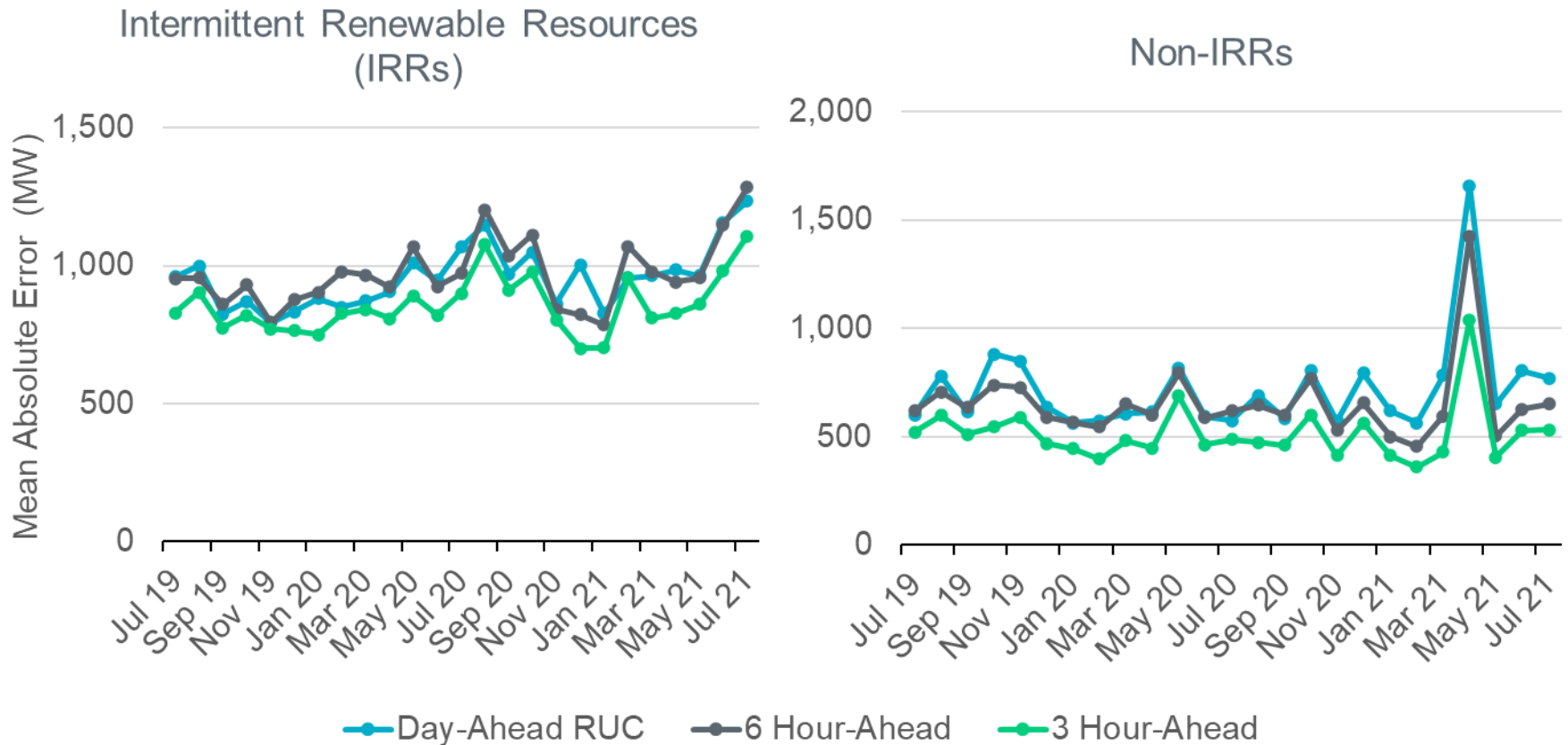


*ERCOT's performance based payment structure for Wind Forecasts with both vendors incentivizes improvements in forecast performance during hours that are of more importance to operational reliability. This approach is a paradigm shift from the "traditional" methodology of measuring wind forecast performance as a singular monthly average metric.

Forecast performance during large down ramp (wind ramp > 2000 MW) hours and high risk hours (historic risk of load ramping up and wind ramping down is high) is focused upon. Note that for the purposes of forecast performance measurement every hour in a month is classified as either a large down ramp hour or a high risk hour or something else. Any hour that is a high risk hour wherein a large down ramp was experienced will be tracked as a large down ramp hour.

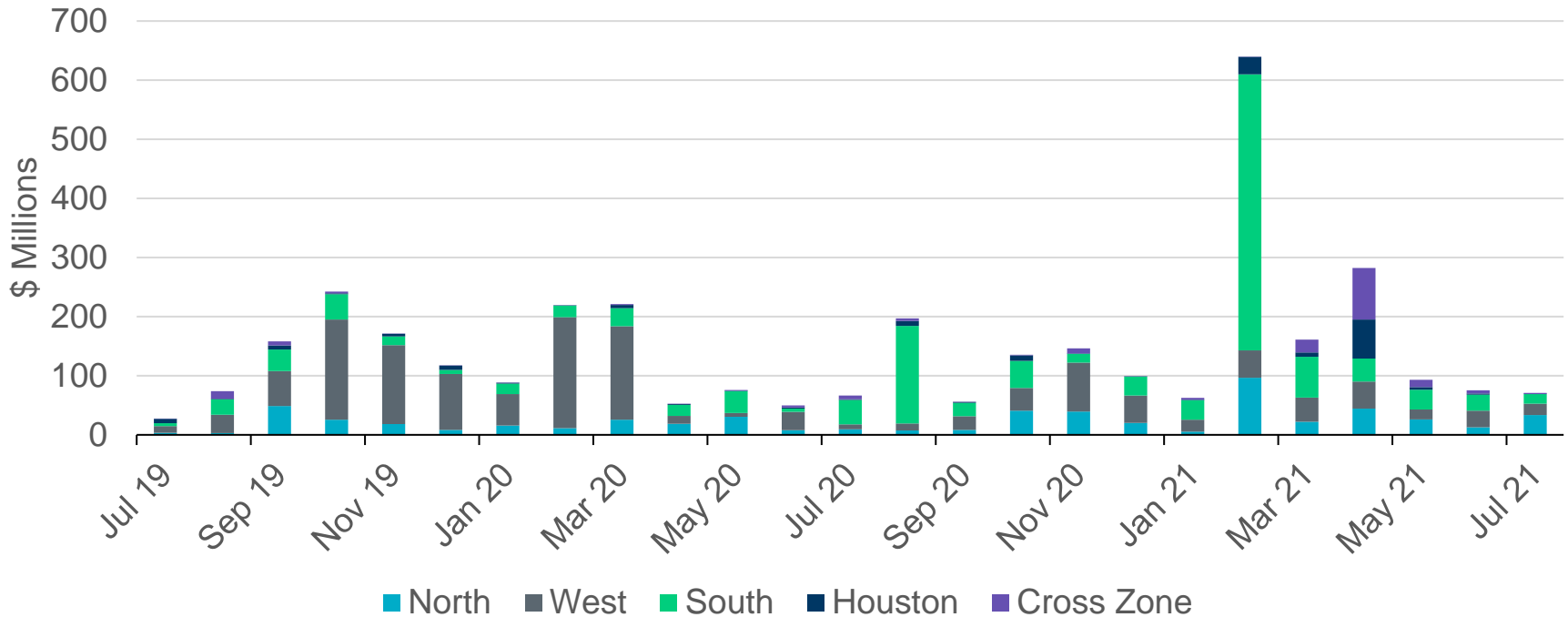


Current Operating Plan (COP) Performance



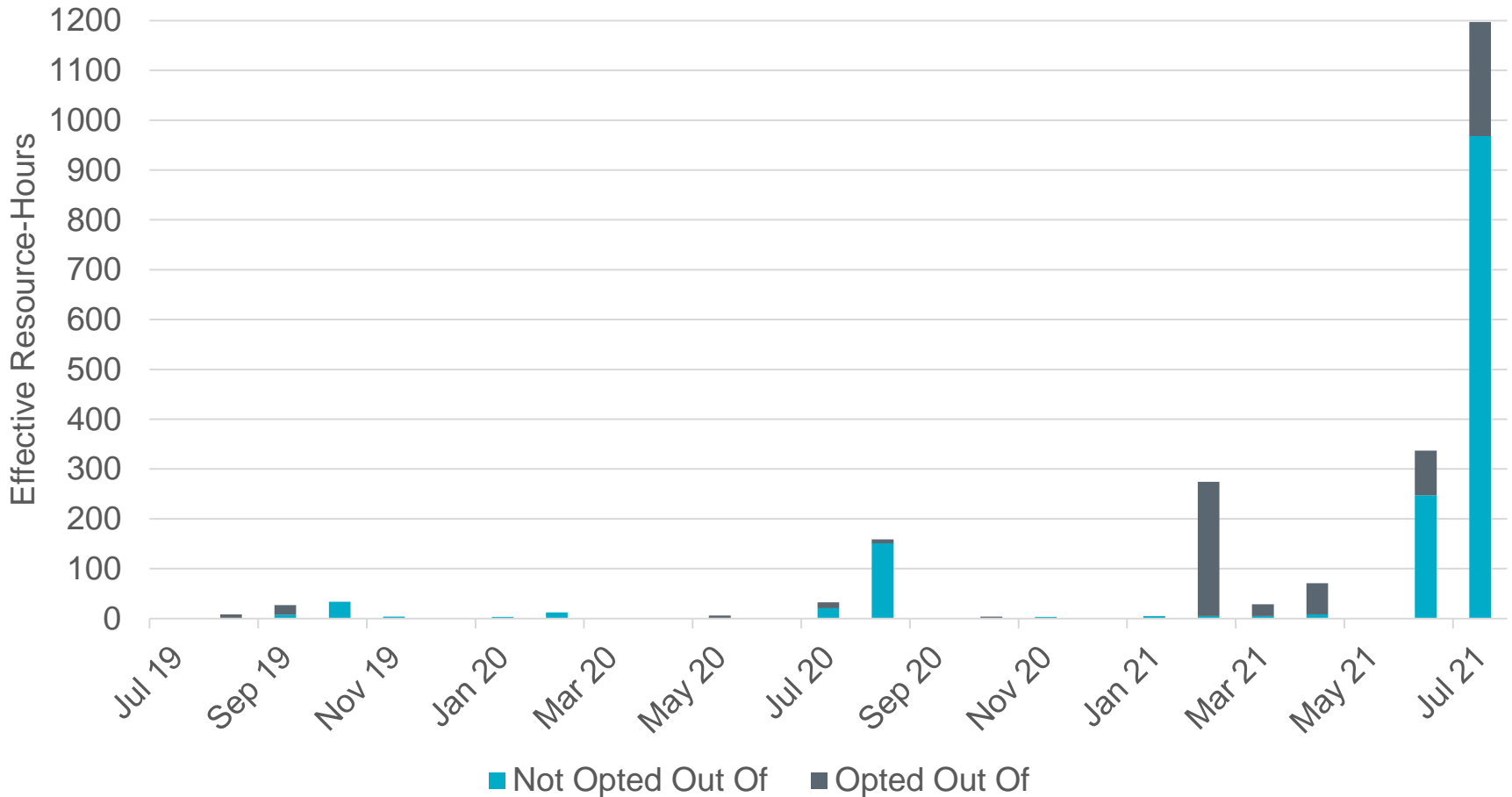
- COPs for IRRs are derived from wind and solar forecasts from ERCOT with any adjustments from Qualified Scheduling Entities.
- The installed capacity of approved Wind Units is 32,581 MW (as of June 30, 2021).
- The installed capacity of approved Solar Units is 7,880 MW (as of June 30, 2021).

Real-Time Congestion Rent by Zone



- The congestion rent for July increased in the North Zone and decreased across all other Zones when compared to June. The most significant constraints for June are DHCKDEN8: 6265__E and DEMSPKR5: 1040__D in the North Zone.
- Congestion Rent is determined using the shadow prices and MW flows for individual constraints in SCED as well as the length in time of SCED intervals.
- The “Cross Zone” category consists of cases in which the substations on either end of the constraint are in different zones.

Forty Resources were Committed through RUC in July for Capacity



“Effective Resource-hours” excludes any period during a Reliability Unit Commitment hour when the RUC-committed Resource was starting up, shutting down, off-line, or otherwise not available for dispatch by SCED.

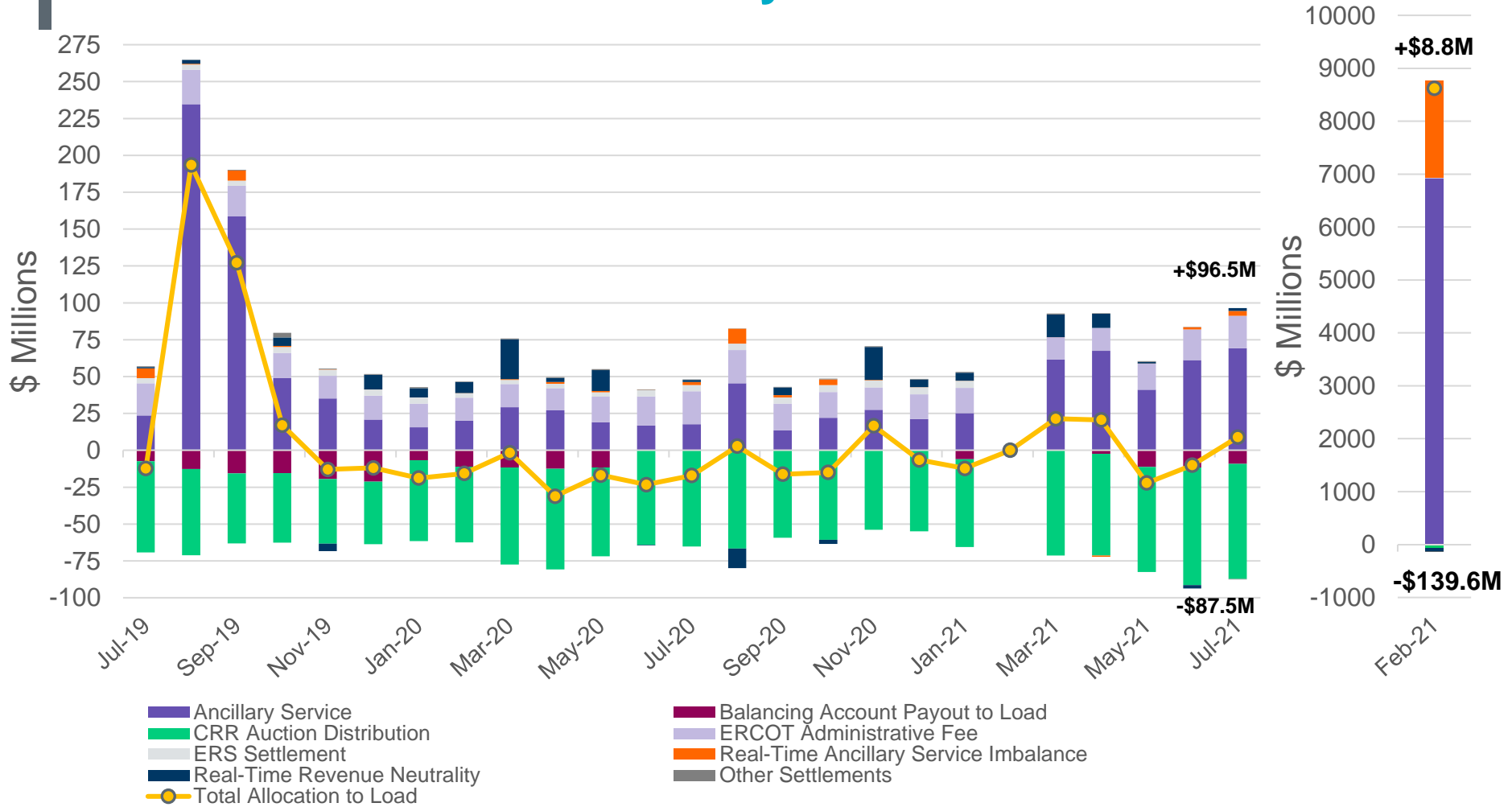
Forty Resources were Committed through RUC in July for Capacity

Resource #	Effective Resource-hours	Non Opt Out (Effective Hours)	Opt Out (Effective Hours)
1	2.8	0.0	2.8
2	54.0	30.0	24.0
3	49.1	49.1	0.0
4	3.0	0.0	3.0
5	3.0	0.0	3.0
6	7.6	7.6	0.0
7	10.0	9.0	1.0
8	10.0	10.0	0.0
9	3.0	0.0	3.0
10	17.0	17.0	0.0
11	16.0	16.0	0.0
12	20.0	11.0	9.0
13	93.0	66.0	27.0
14	58.0	54.0	4.0
15	64.0	64.0	0.0
16	47.0	47.0	0.0
17	33.0	33.0	0.0
18	3.9	3.9	0.0
19	3.0	0.0	3.0
20	3.0	0.0	3.0
21	3.0	0.0	3.0
22	79.7	57.7	22.0
23	70.8	57.8	13.0
24	9.9	7.9	2.0
25	17.0	0.0	17.0
26	7.0	7.0	0.0
27	85.9	85.9	0.0
28	17.0	9.0	8.0
29	36.7	36.7	0.0
30	40.7	40.7	0.0
31	3.0	0.0	3.0
32	104.2	95.2	9.0
33	56.0	47.0	9.0
34	26.7	10.9	15.8
35	0.0	0.0	0.0
36	15.8	5.9	9.9
37	7.0	0.0	7.0
38	7.0	0.0	7.0
39	9.0	9.0	0.0
40	99.9	79.9	20.0

“Effective Resource-hours” excludes any period during a Reliability Unit Commitment hour when the RUC-committed Resource was starting up, shutting down, off-line, or otherwise not available for dispatch by SCED.



Net Allocation to Load in July 2021 was \$9 Million

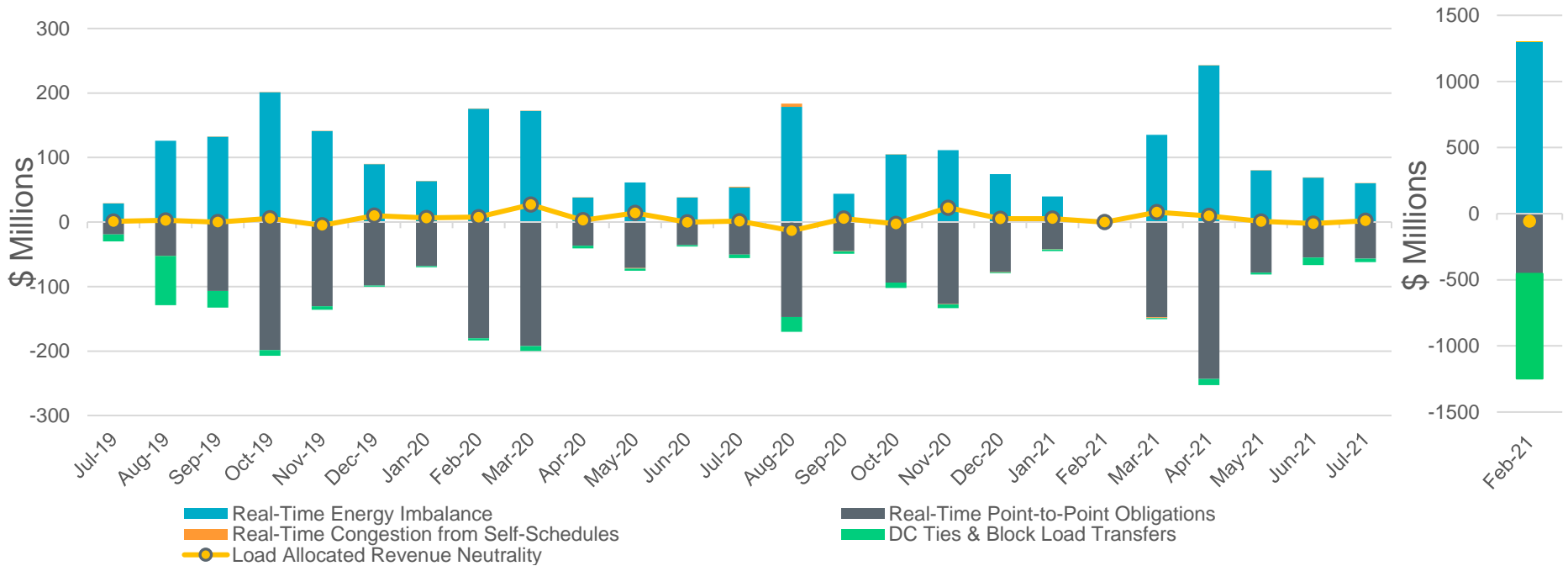


This information is available in tabular form in the Settlement Stability Report presented quarterly to the [Wholesale Market Subcommittee](#)

Note: For visual purposes, February 2021 has been separated into its own graph with different scaling. The legend applies for both graphs.



Real-Time Revenue Neutrality Allocated to Load was \$1.94M for July 2021

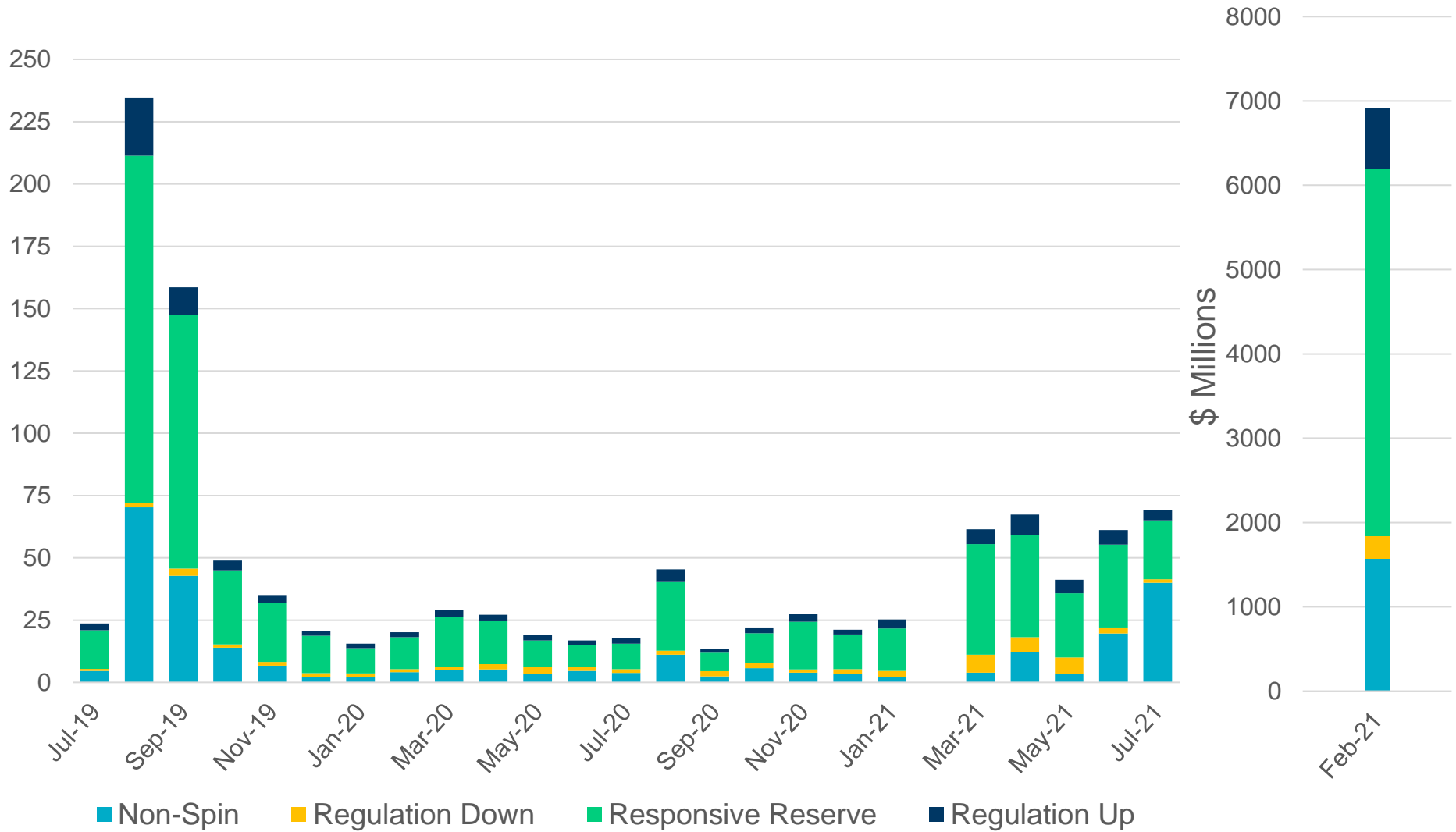


July 2021 (\$M)	
Real-Time Energy Imbalance	\$60.12
Real-Time Point-to-Point Obligation	(\$56.75)
Real-Time Congestion from Self-Schedules	\$0.20
DC Tie & Block Load Transfer	(\$5.51)
Load Allocated Revenue Neutrality	\$1.94

Note: For visual purposes, February 2021 has been separated into its own graph with different scaling. The legend applies for both graphs.



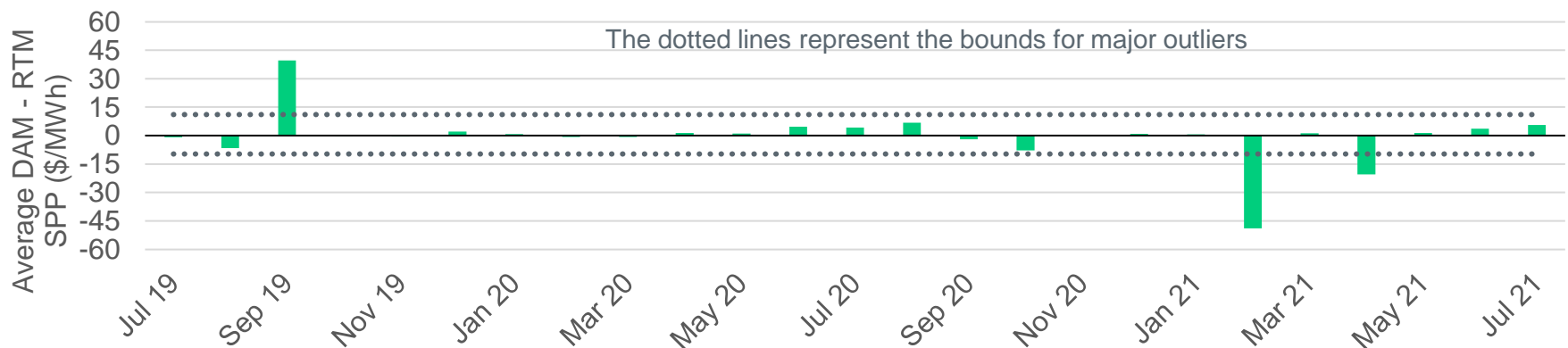
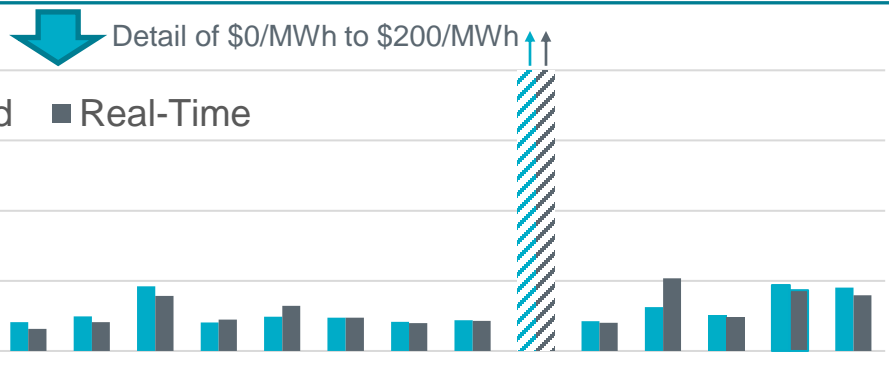
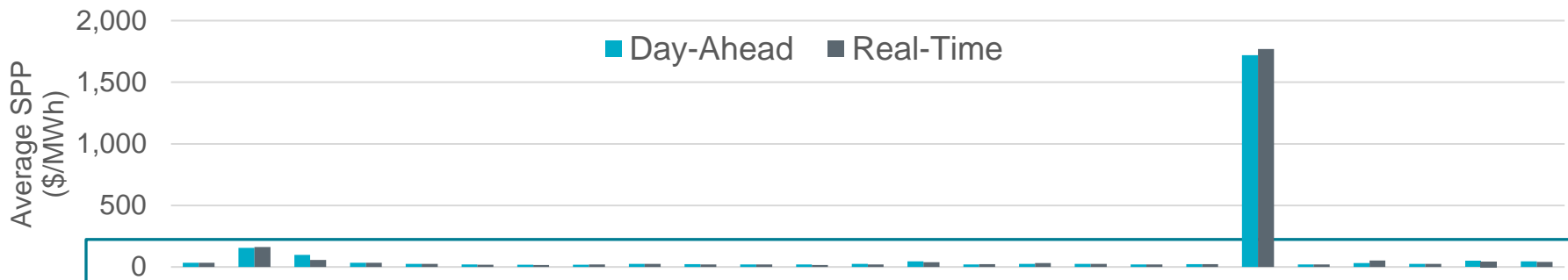
Ancillary Services for July 2021 totaled \$69.18M



Note: For visual purposes, February 2021 has been separated into its own graph with different scaling. The legend applies for both graphs.



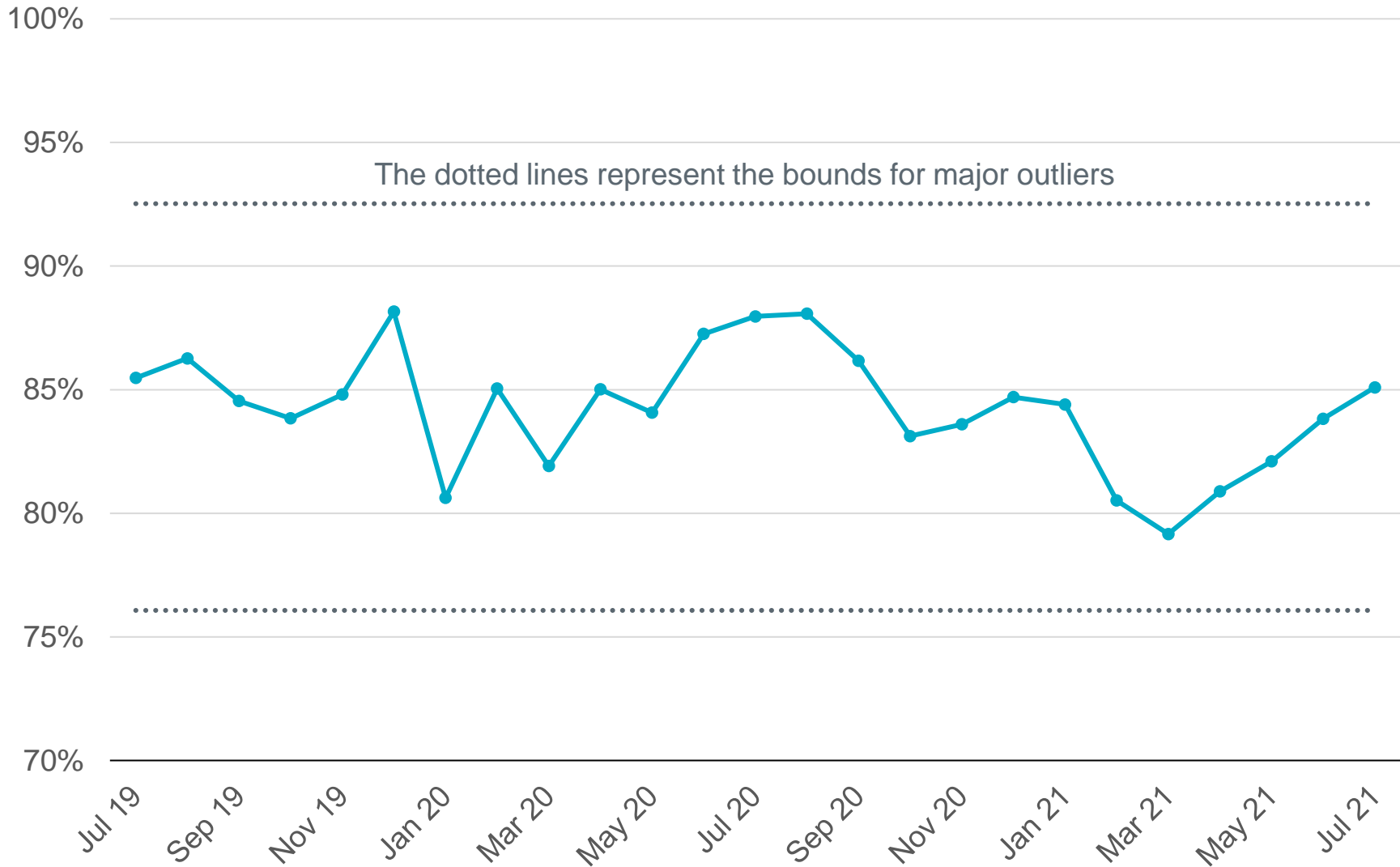
Day-Ahead and Real-Time Market Price Differences



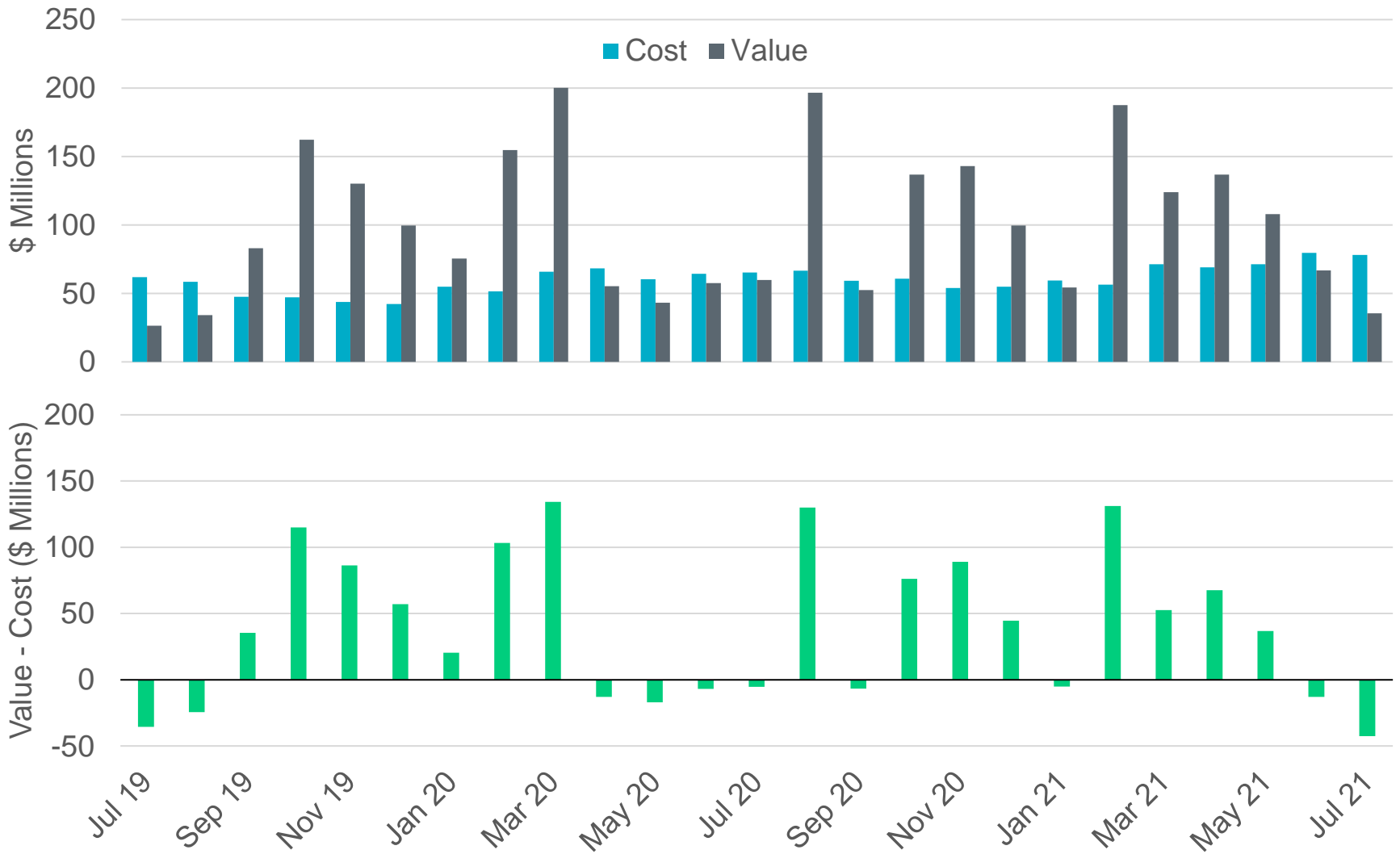
*Averages are weighted by Real-Time Market Load



Percentage of Real-Time Load Transacted in the Day-Ahead Market



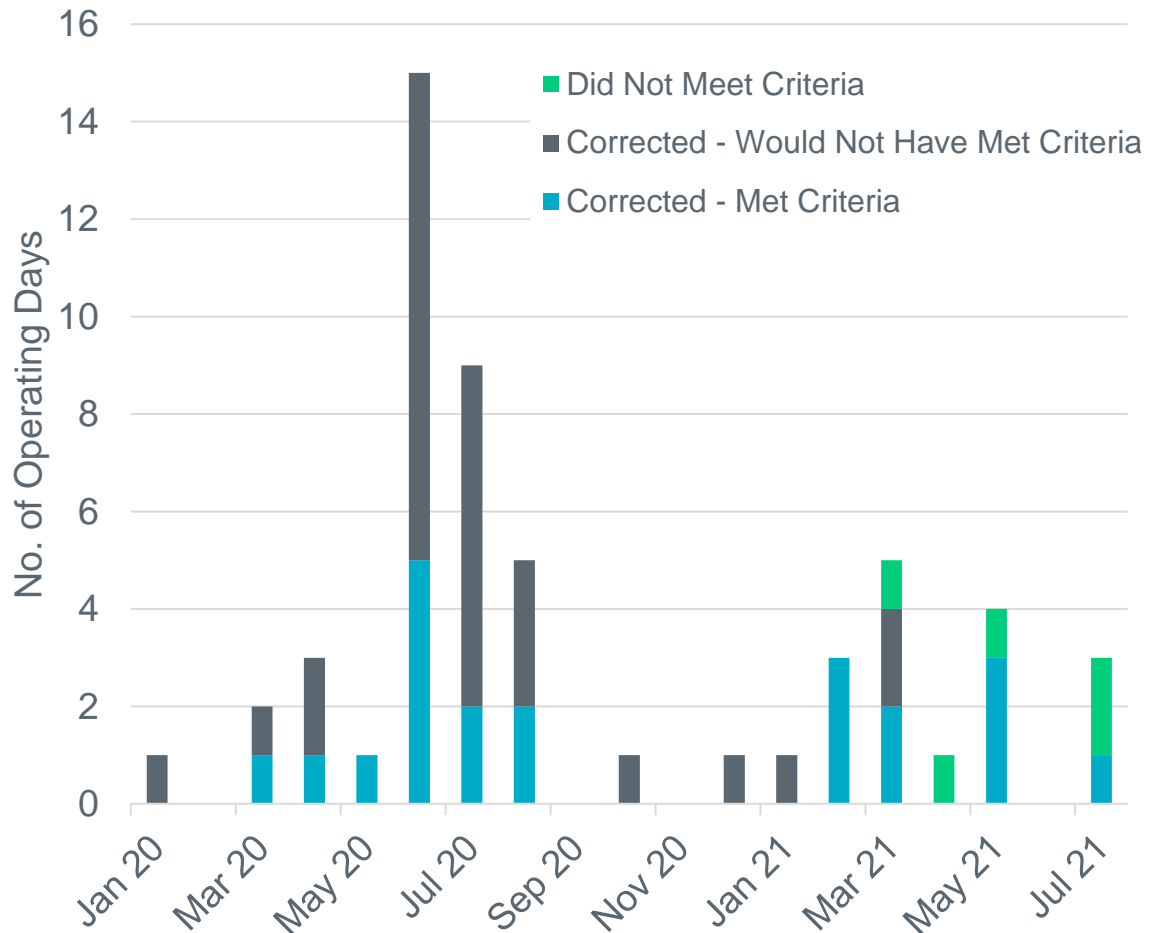
CRR Value and Cost Differences



Price Issues and the Impact of Nodal Protocol Revision Request (NPRR) 1024 on Price Corrections

This graph looks at the recent history of price issues in the RTM or DAM and breaks the impacted Operating Days into three categories:

- Days that met the criteria for “significance” under NPRR1024 and were corrected;
- Days that would not have met the criteria for “significance” under NPRR1024, but were corrected because NPRR1024 was not yet in place; and
- Days that were not corrected because they did not meet the criteria for “significance” under NPRR1024.



Details on Price Issues not Meeting the Criteria for Significance

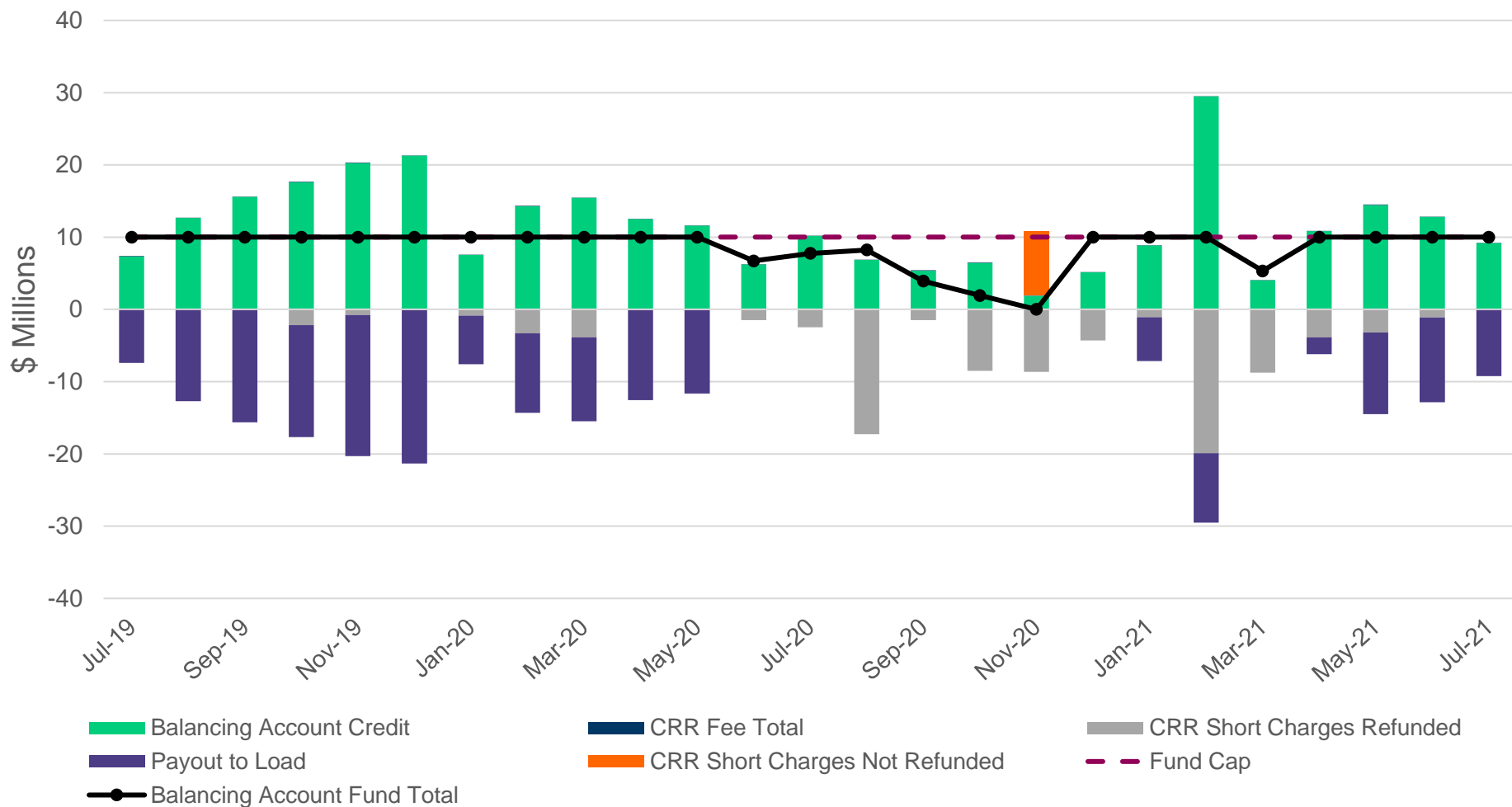
Operating Day July 12, 2021

- The price issue was driven by SCED executions that were missed during a routine planned site failover.
- Impacts were minor and specific to Real-Time Prices for Energy Metered for Resources (RTRMPRs).
 - The total dollar impact was estimated as less than \$30

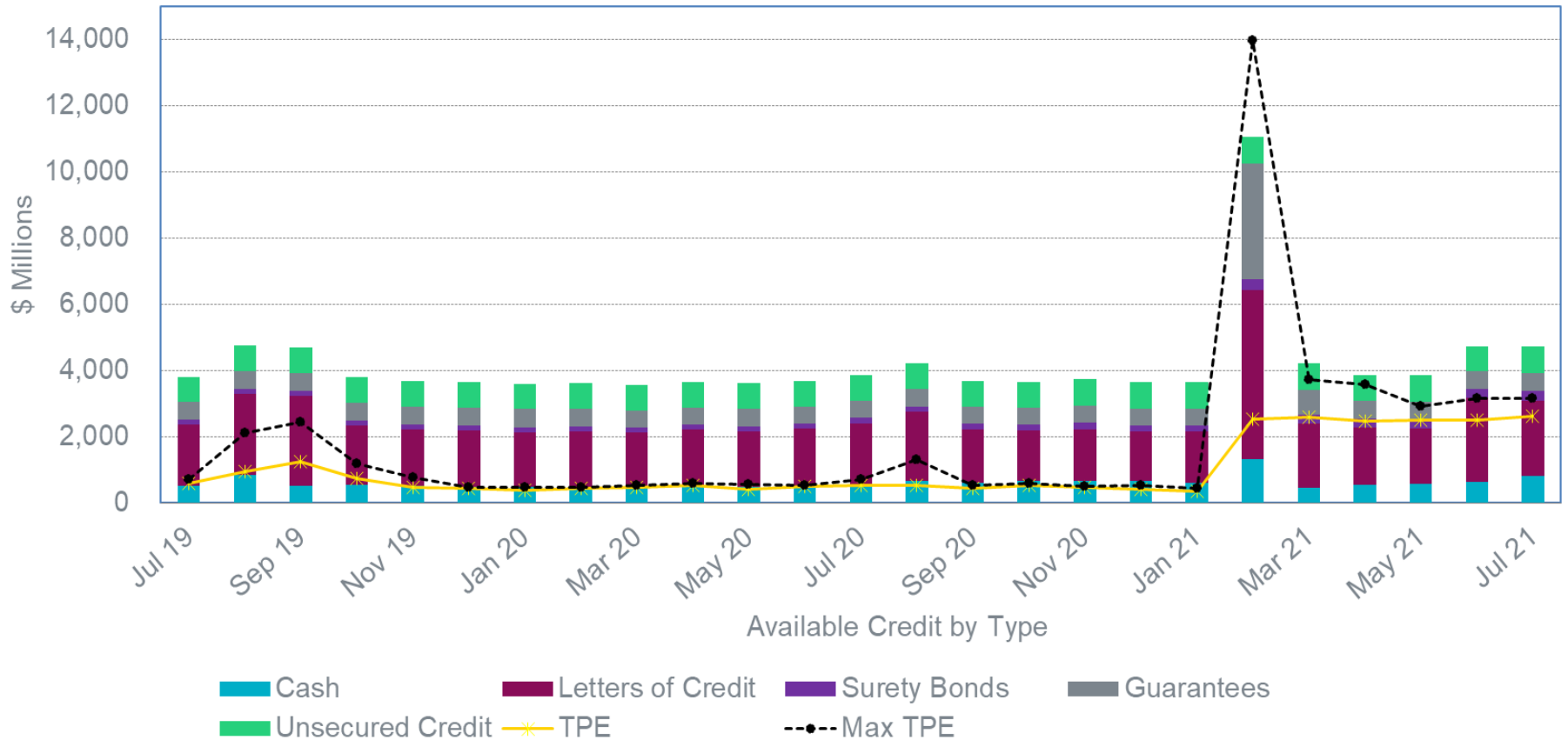
Operating Day July 27, 2021

- The price issue was driven by SCED executions that were missed during ERCOT Unannounced Constant Frequency Control Test.
- Impacts were minor and specific to Real-Time Prices for Energy Metered for Resources (RTRMPRs).
 - The total dollar impact was estimated as less than \$50

The CRR Balancing Account was fully funded and excess amounts were allocated to Load



Available Credit by Type Compared to Total Potential Exposure (TPE)



*Numbers are as of month end except for Max TPE



Retail Transaction Volumes – Summary – July 2021

Transaction Type	Year-To-Date		Transactions Received	
	July 2021	July 2020	July 2021	July 2020
Switches	875,755	680,423	87,752	109,354
Acquisitions	48,862	0	0	0
Move - Ins	1,612,269	1,568,770	291,498	267,239
Move - Outs	747,904	766,989	132,899	128,444
Continuous Service Agreements (CSA)	391,754	315,556	42,805	35,142
Mass Transitions	26,584	0	0	0
Total	3,703,128	3,331,738	554,954	540,179