ERCOT Monthly Operational Overview
(October 2021)

ERCOT Public
November 18, 2021

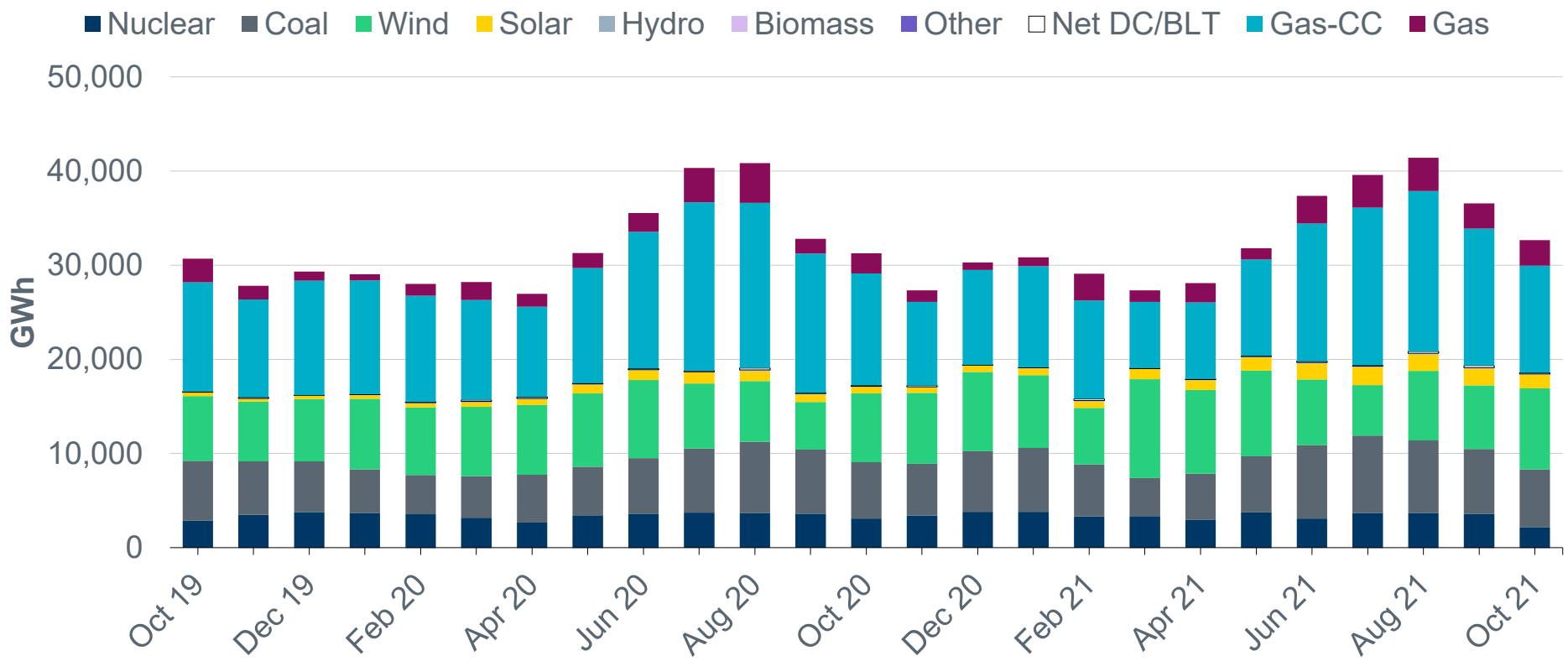
Notifications and Records

- ERCOT set a maximum peak demand of 62,461 MW* for the month of October, which is 603 MW less than the October 2020 demand of 63,064 MW.

- ERCOT issued 6 notifications:
  - 2 DC Tie Curtailment Notices for DC_L (Laredo VFT) DC Tie due to a planned or unplanned outage.
  - 1 Advisory for delay in clearing DAM and posting of DAM Solution.
  - 3 AANs for possible future Emergency Condition reserve capacity deficiency.
    - 1 AAN requiring Outage Scheduler Adjustment (OSA) issued for Planned Outages.

* Preliminary value from November release of Demand and Energy 2021 report.

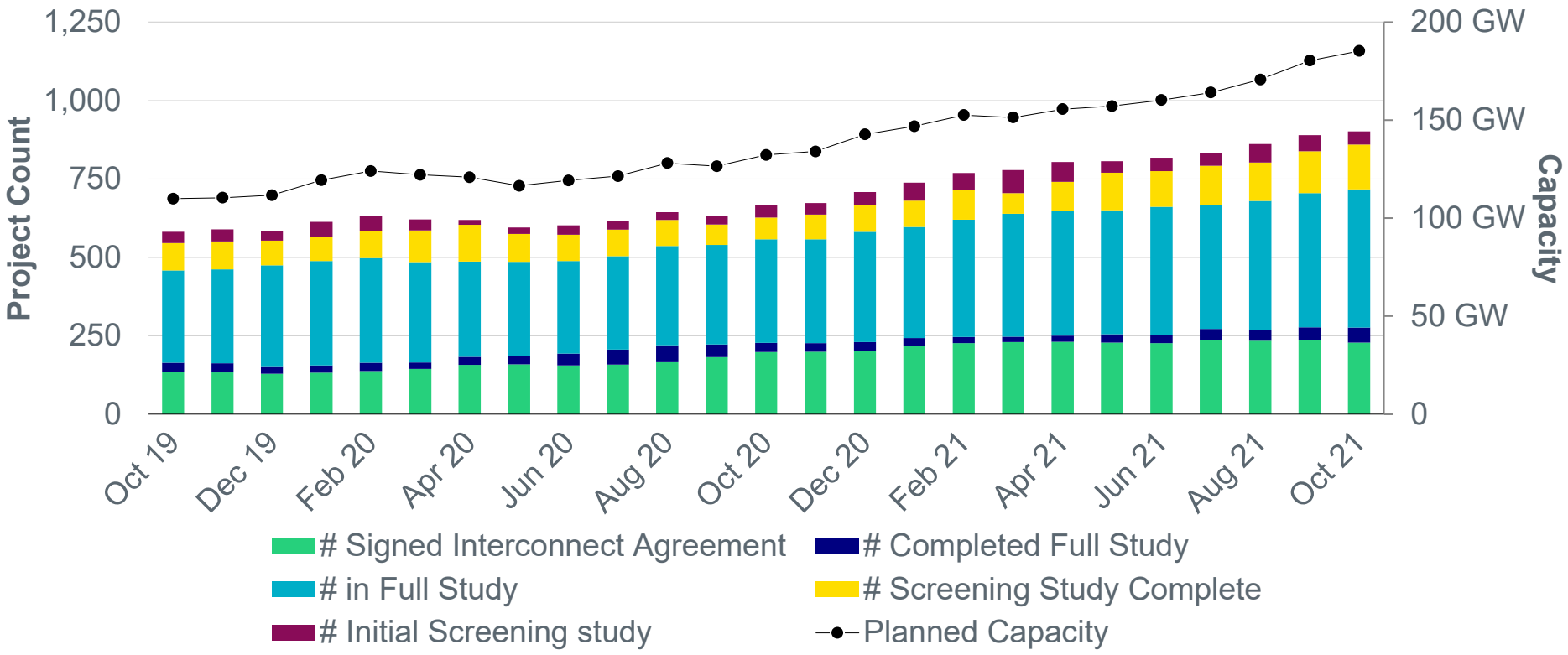
Monthly energy generation increased by 4.5% year-over-year to 32,659 GWh in October 2021, compared to 31,266 GWh in October 2020



Data for latest two months are based on preliminary settlements.

Generation Interconnection activity by project phase

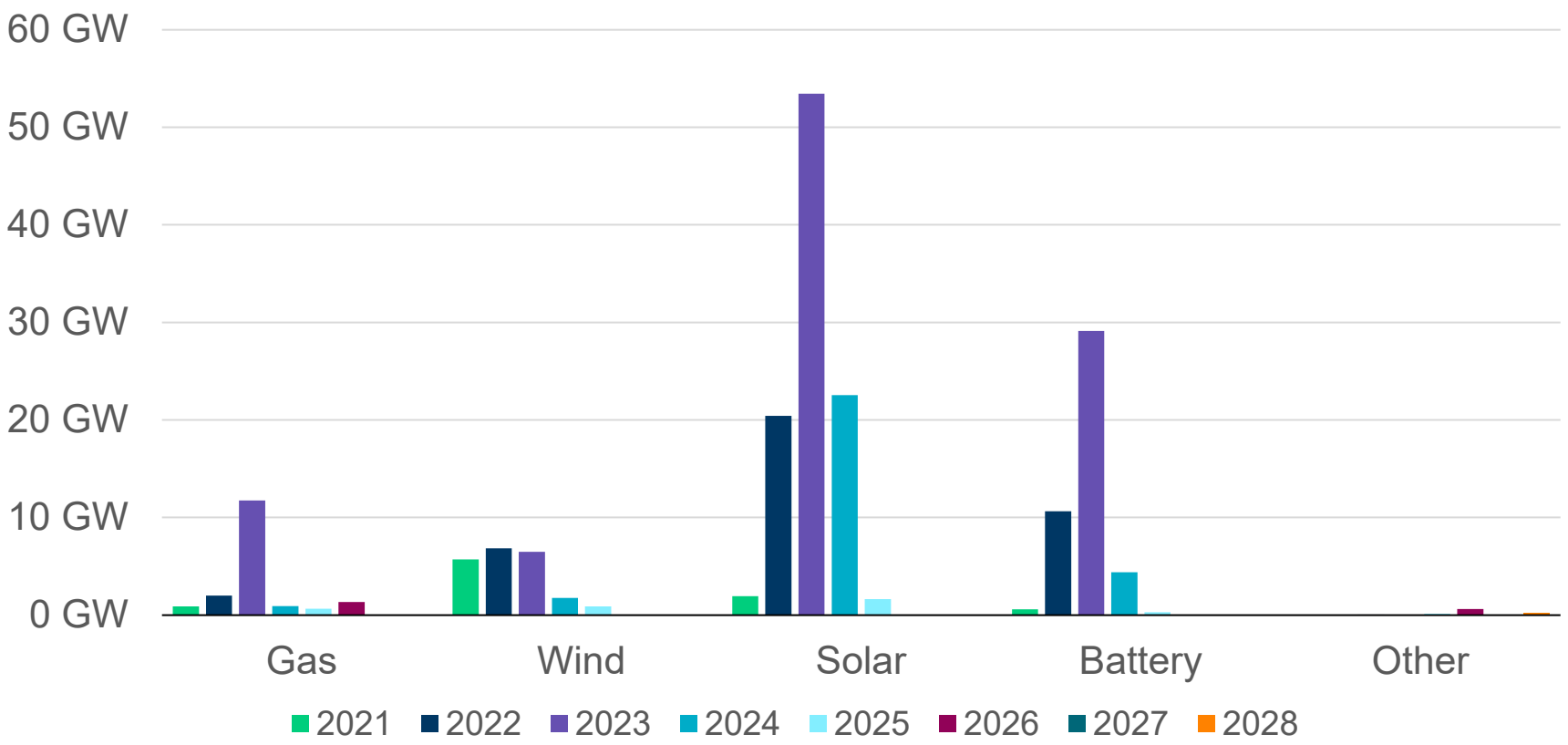
(Excludes capacity associated with Projects designated as Inactive per Planning Guide Section 5.7.6)



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 100 GW (54.0%), Wind 22 GW (11.7%), Gas 18 GW (9.5%), Battery 45 GW (24.3%)
(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 is tracking 902 active generation interconnection requests totaling 185,319 MW as of October 31, 2021. This includes 99,989 MW of solar, 21,706 MW of wind, 45,029 MW of battery, and 17,560 MW of gas projects; 59 projects are categorized as inactive, down from 60 inactive projects in September.

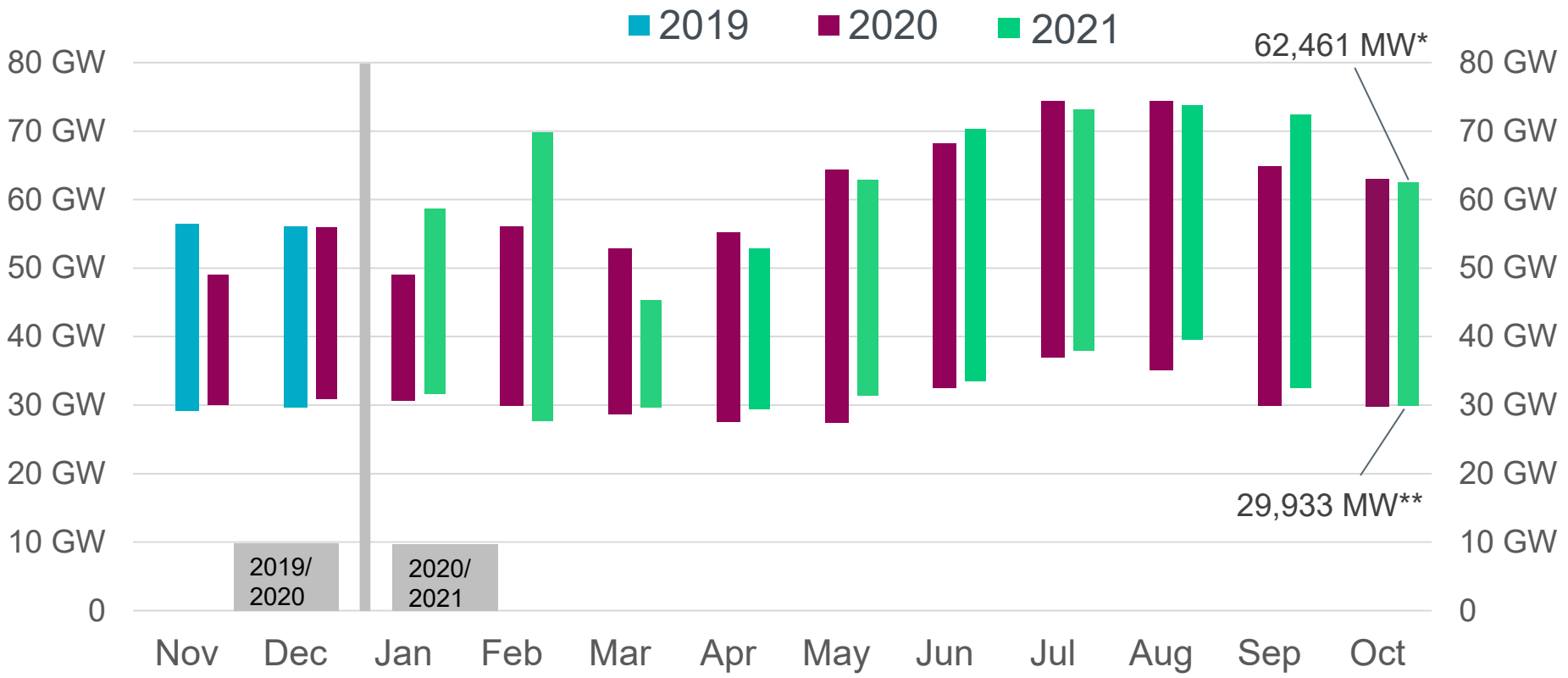
- ERCOT is currently reviewing proposed transmission improvements with a total estimated cost of $1,401.96 Million as of October 31, 2021.

- Transmission Projects endorsed in 2021 total $1,014.4 Million as of October 31, 2021.

- All projects (in engineering, routing, licensing and construction) total approximately $8.00 Billion as of October 1, 2021.

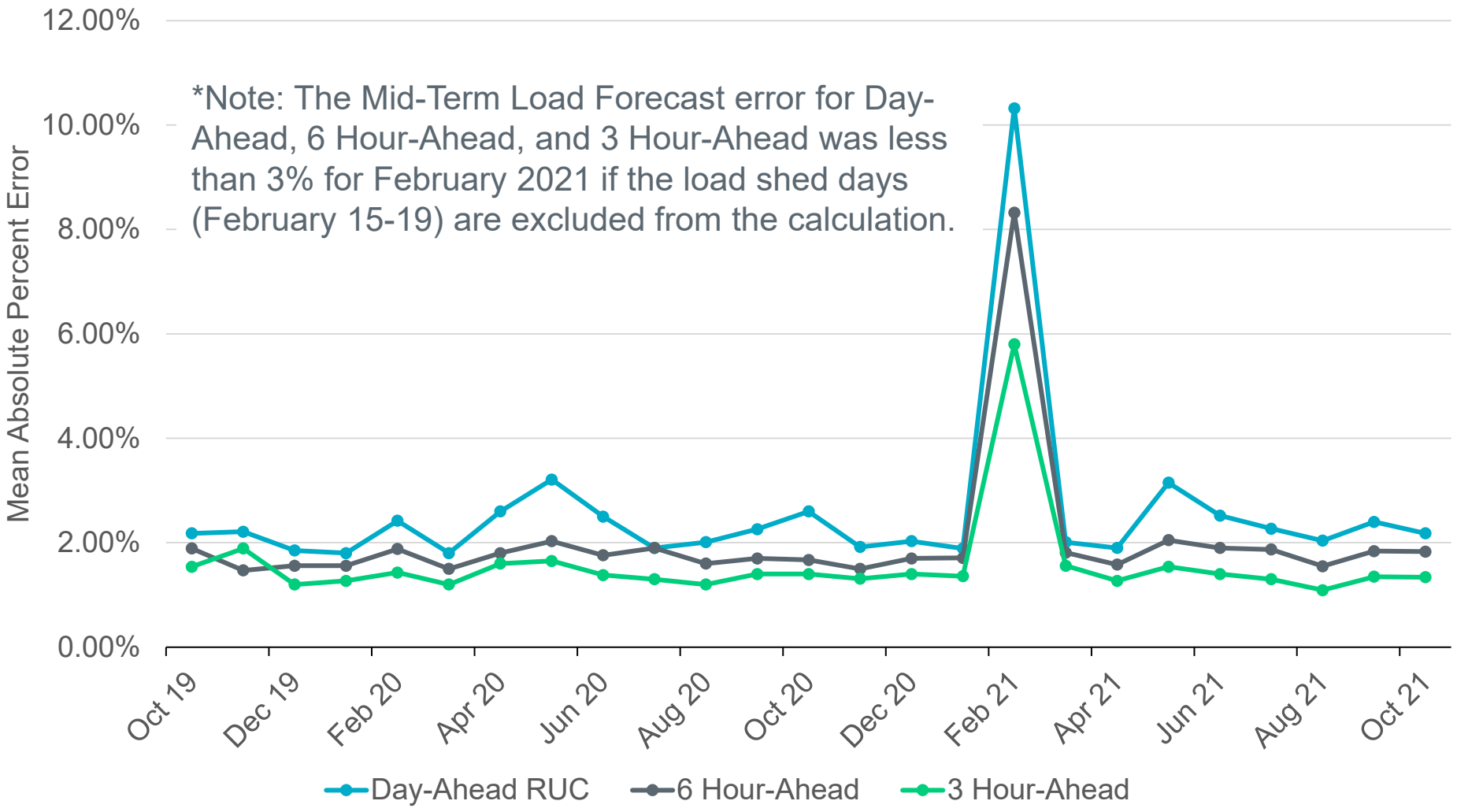
- Transmission Projects energized in 2021 total about $1.438 Billion as of October 1, 2021.

ERCOT set a maximum peak demand of 62,461 MW* for the month of October, which is 603 MW less than the October 2020 demand of 63,064 MW



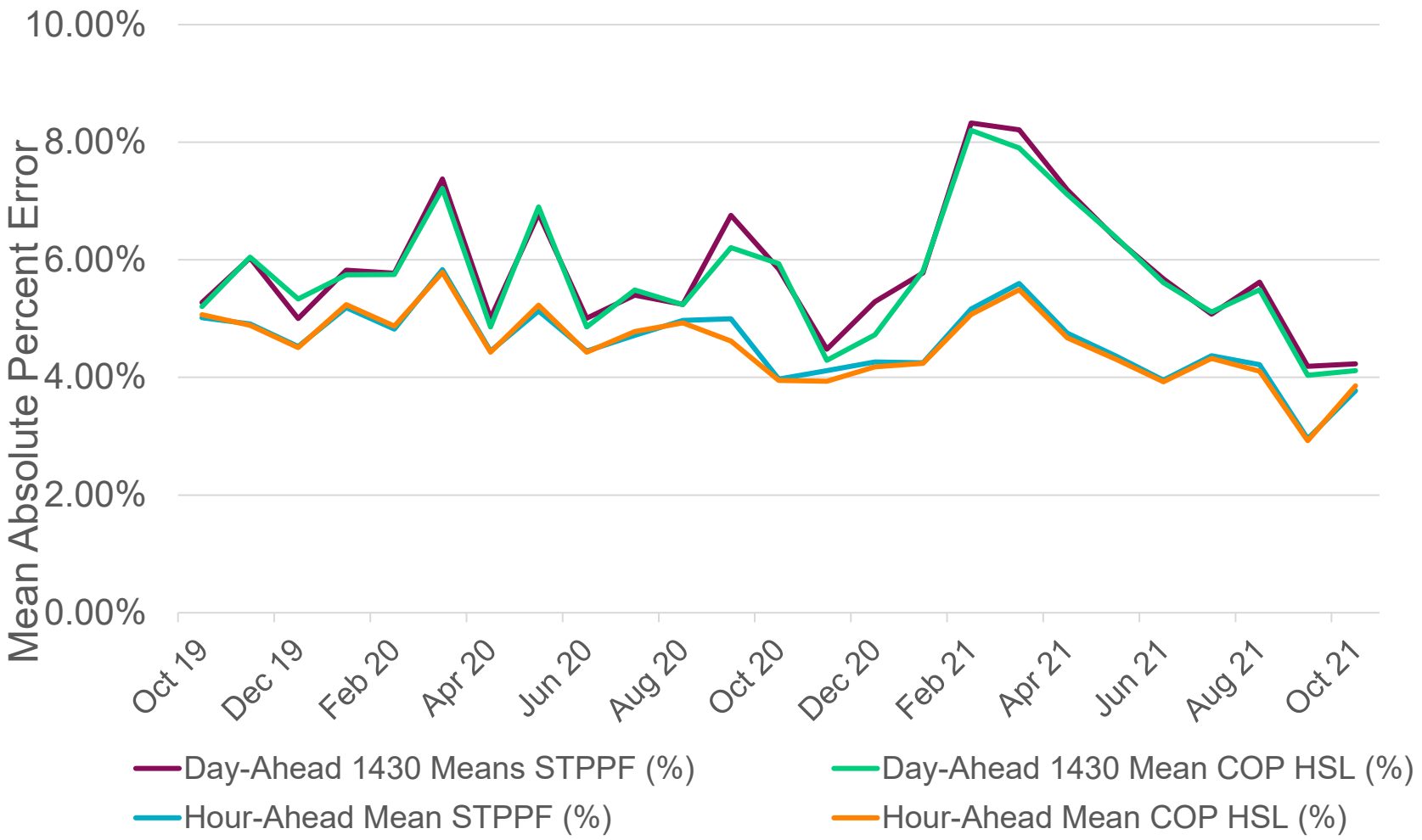
*Based on the maximum net system hourly value from November release of Demand and Energy 2021 report.
**Based on the minimum net system 15-minute interval value from November release of Demand and Energy 2021 report.
Data for latest two months are based on preliminary settlements.

Mid-Term Load Forecast Performance



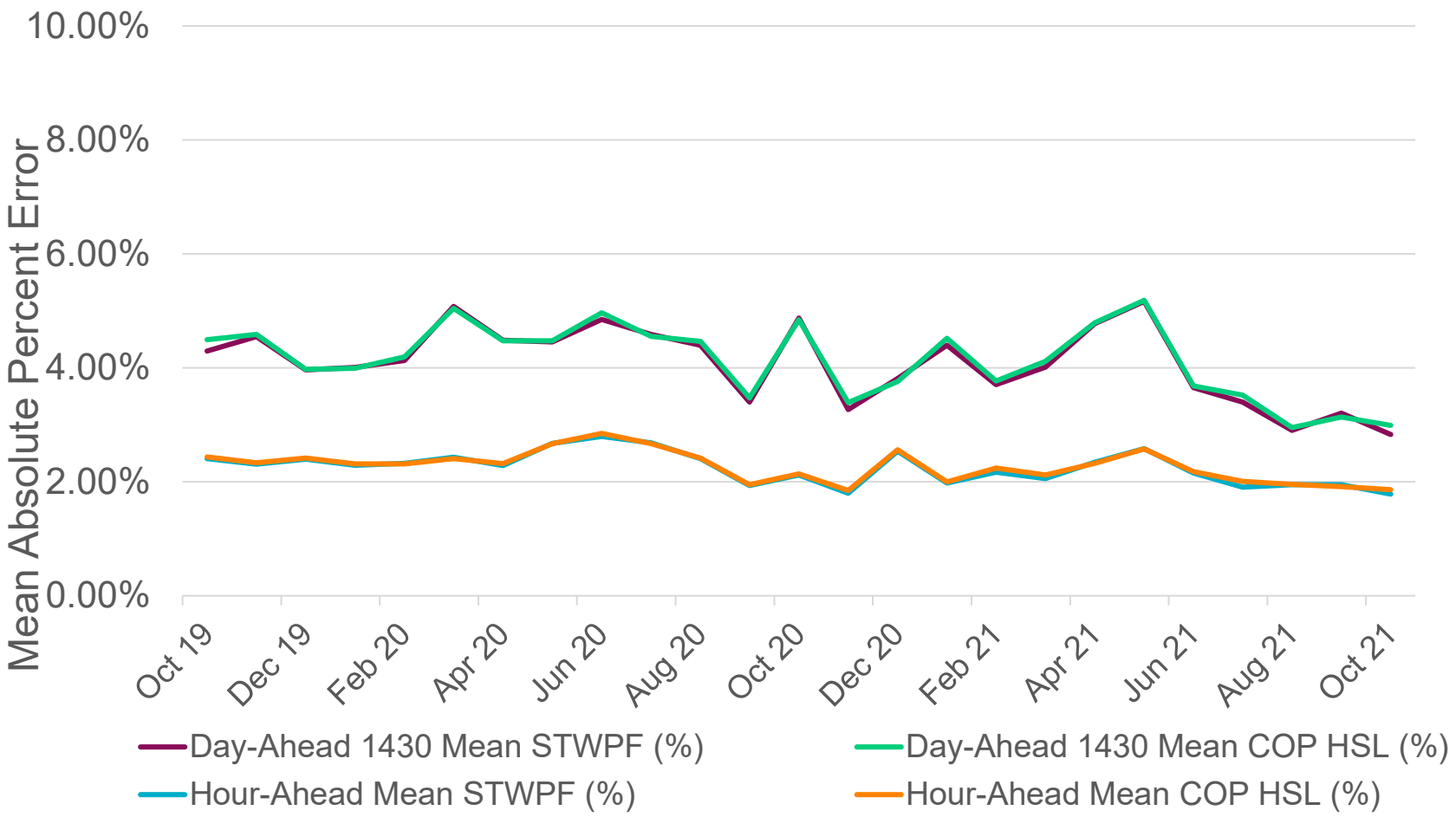
The Mid-Term Load Forecast is an hourly forecast that looks 7 days into the future

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.

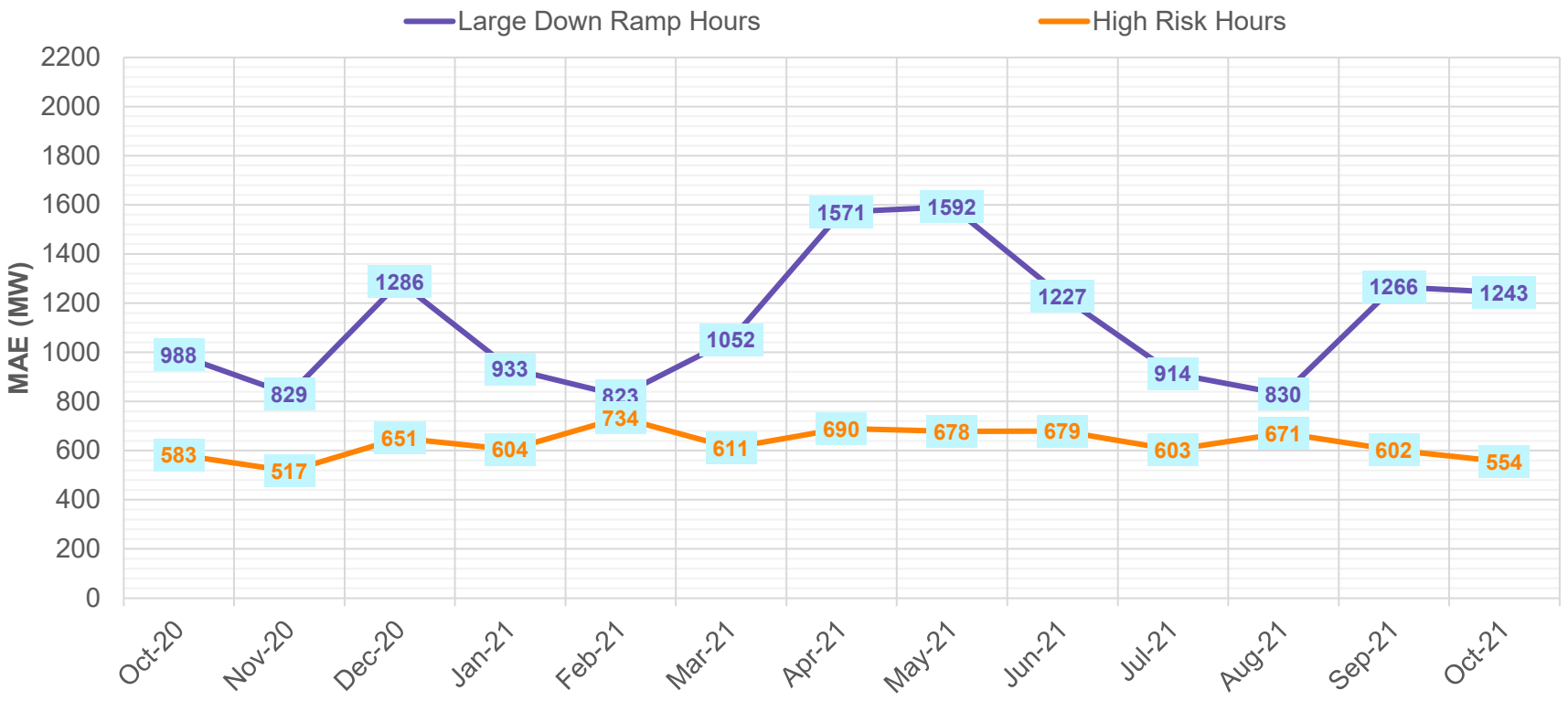
Wind Forecast Performance



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

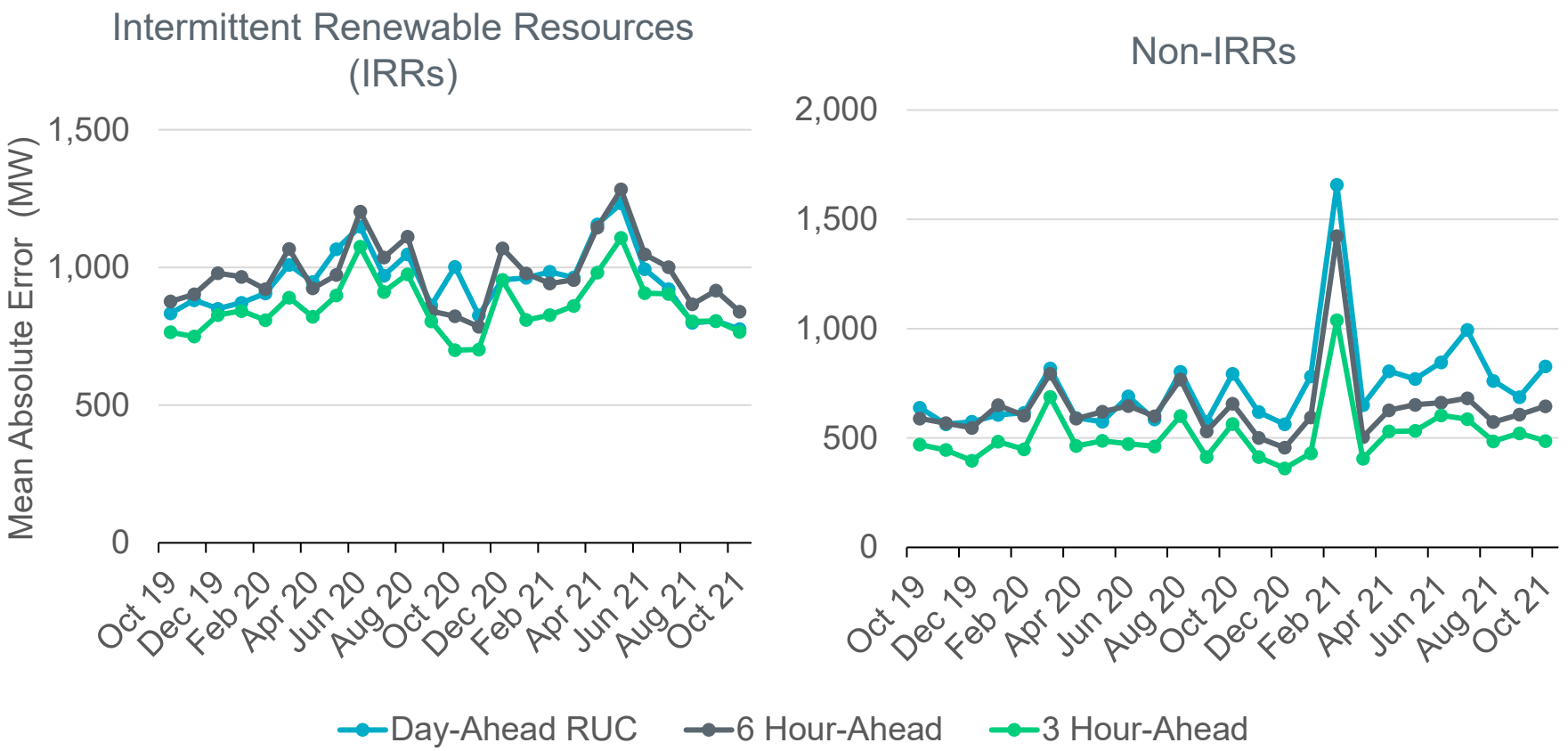
Hour-Ahead Mean Absolute Error (MAE) During Large Down Ramp (> 2000 MW) and High Risk Hours*



**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.*

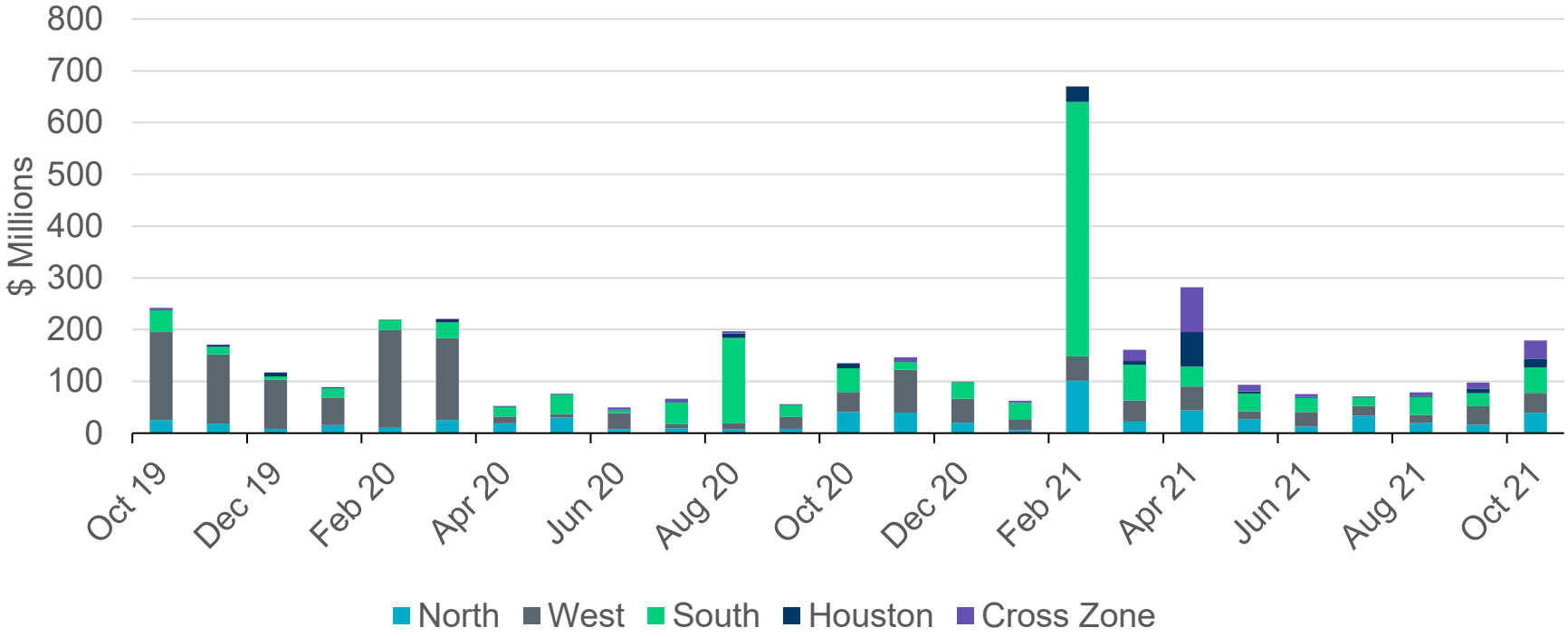
Forecast performance during large down ramp (wind ramp > 2000 MW) hours and high risk hours (historic risk of load ramping up and wind ramping down is high) is focused upon. Note that for the purposes of forecast performance measurement every hour in a month is classified as either a large down ramp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



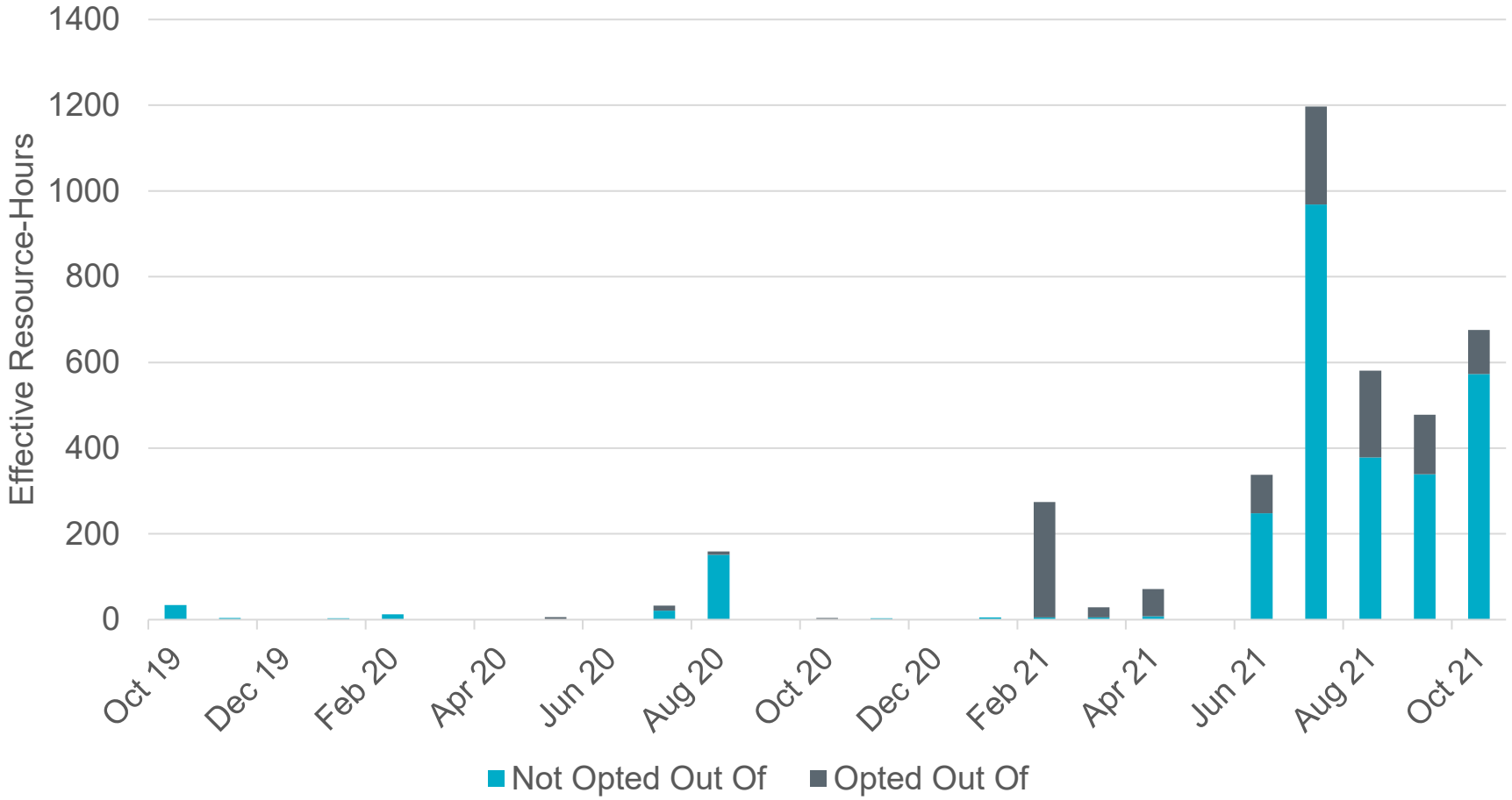
- COPs for IRRs are derived from wind and solar forecasts from ERCOT with any adjustments from Qualified Scheduling Entities.
- The installed capacity of approved Wind Units is 33,868 MW (as of October 31, 2021).
- The installed capacity of approved Solar Units is 8,795 MW (as of October 31, 2021).

Real-Time Congestion Rent by Zone



- Congestion rent in all Zones increased in October compared to September. The largest increases in congestion rent occurred in the South, North, and Cross Zones.
- Congestion rent in the Cross Zone was primarily driven by the constraint BASE CASE: WESTEX. Congestion rent in the North Zone was primarily driven by the constraints DSALKLN5: 630__B and DCRLLSW5: 590__A.
- 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.

Thirty-Five Resources were Committed in October for Capacity, OSA, Congestion, and Minimum Run-Time



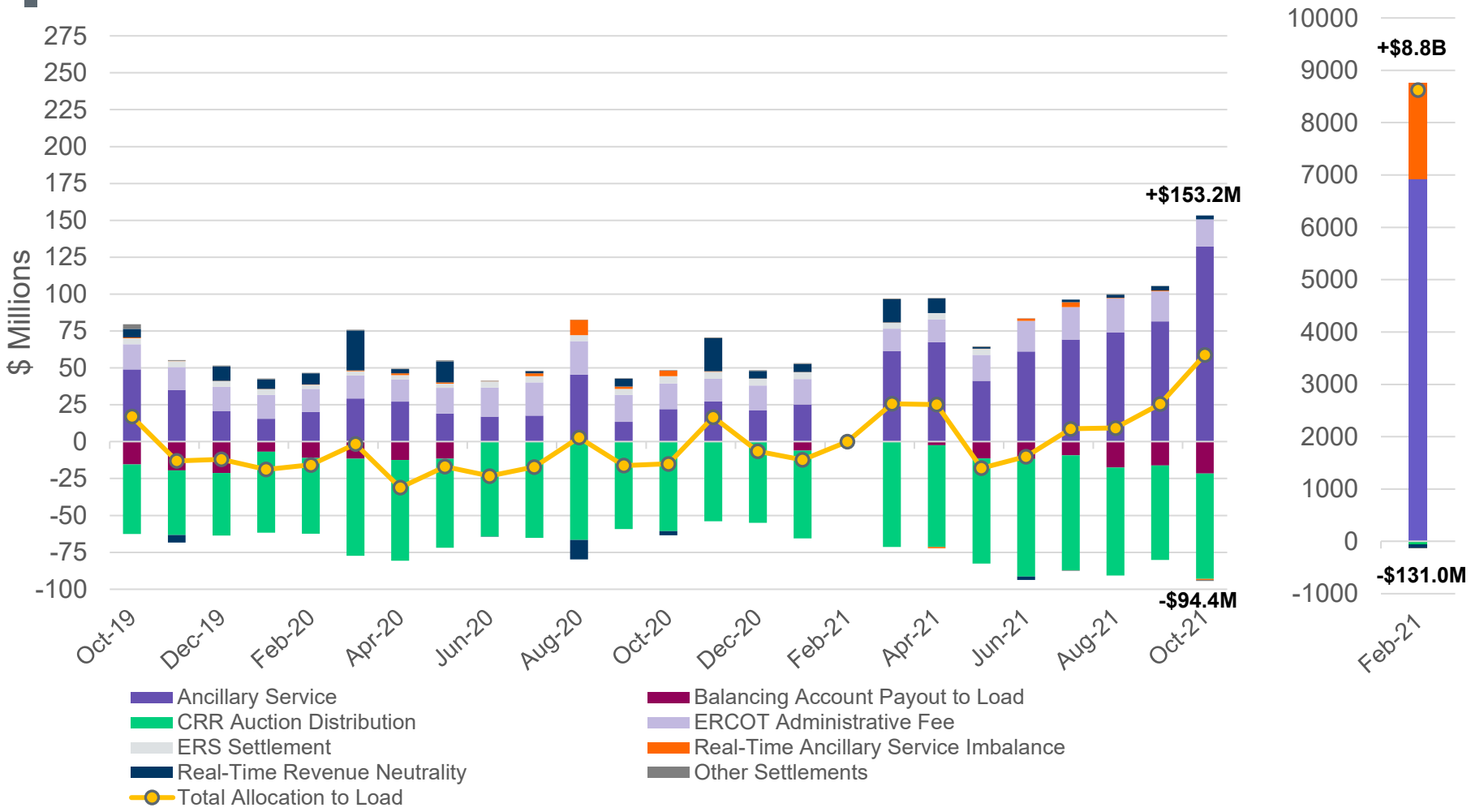
"Effective Resource-Hours" excludes any period during a Reliability Unit Commitment hour when the RUC-committed Resource was starting up, shutting down, off-line, or otherwise not available for dispatch by SCED.

Thirty-Five Resources were Committed through RUC/VDI in October for Capacity and Congestion

Resource #	Effective Resource-hours	Non Opt Out (Effective Hours)	Opt Out (Effective Hours)
1	1.0	1.0	0.0
2	7.6	7.6	0.0
3	17.0	8.0	9.0
4	37.0	37.0	0.0
5	12.2	6.0	6.2
6	22.9	22.9	0.0
7	16.4	6.4	10.0
8	10.0	5.0	5.0
9	29.4	21.0	8.4
10	4.0	4.0	0.0
11	44.0	44.0	0.0
12	4.5	4.5	0.0
13	13.9	13.9	0.0
14	2.9	2.9	0.0
15	2.9	2.9	0.0
16	2.9	2.9	0.0
17	18.6	18.6	0.0
18	42.2	42.2	0.0
19	18.0	18.0	0.0
20	60.0	60.0	0.0
21	36.0	36.0	0.0
22	7.7	7.7	0.0
23	16.8	16.8	0.0
24	72.0	70.0	2.0
25	34.4	20.6	13.8
26	45.8	16.0	29.8
27	18.0	18.0	0.0
28	7.9	7.9	0.0
29	7.2	7.2	0.0
30	3.9	3.9	0.0
31	32.0	32.0	0.0
32	6.1	0.0	6.1
33	7.9	7.9	0.0
34	6.0	0.0	6.0
35	6.0	0.0	6.0

“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.

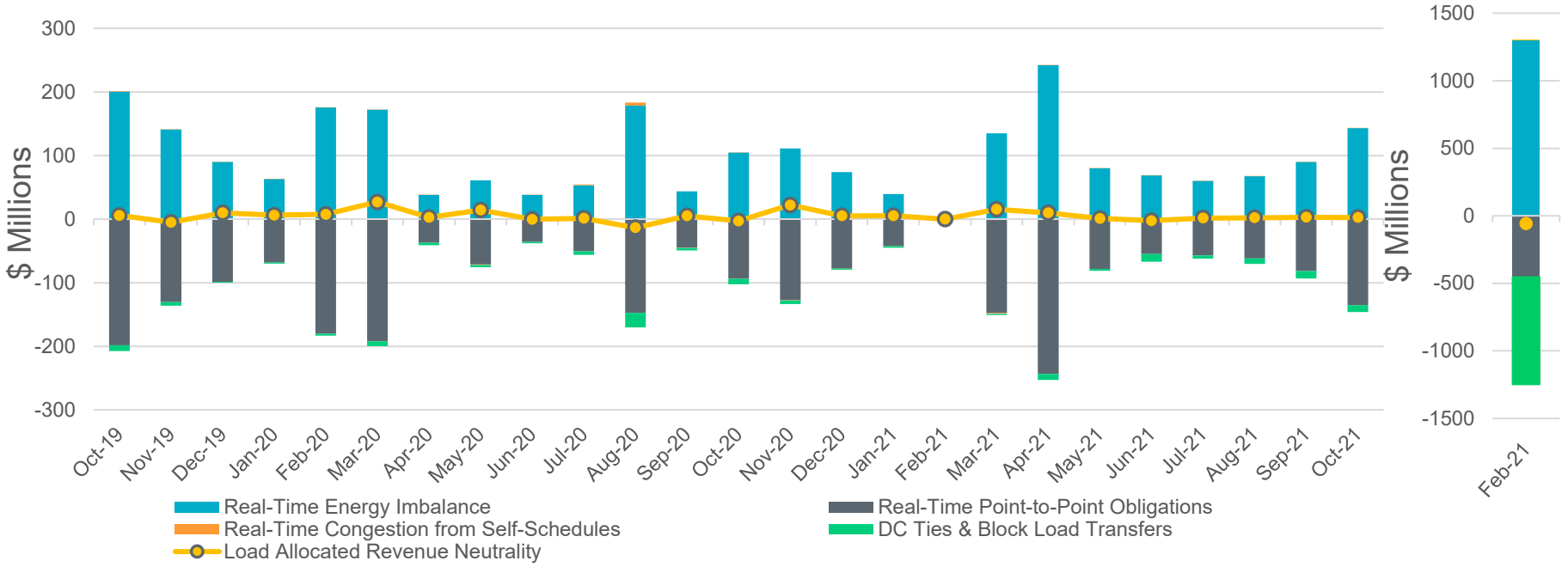
Net Allocation to Load in October 2021 was $58.8 Million



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.

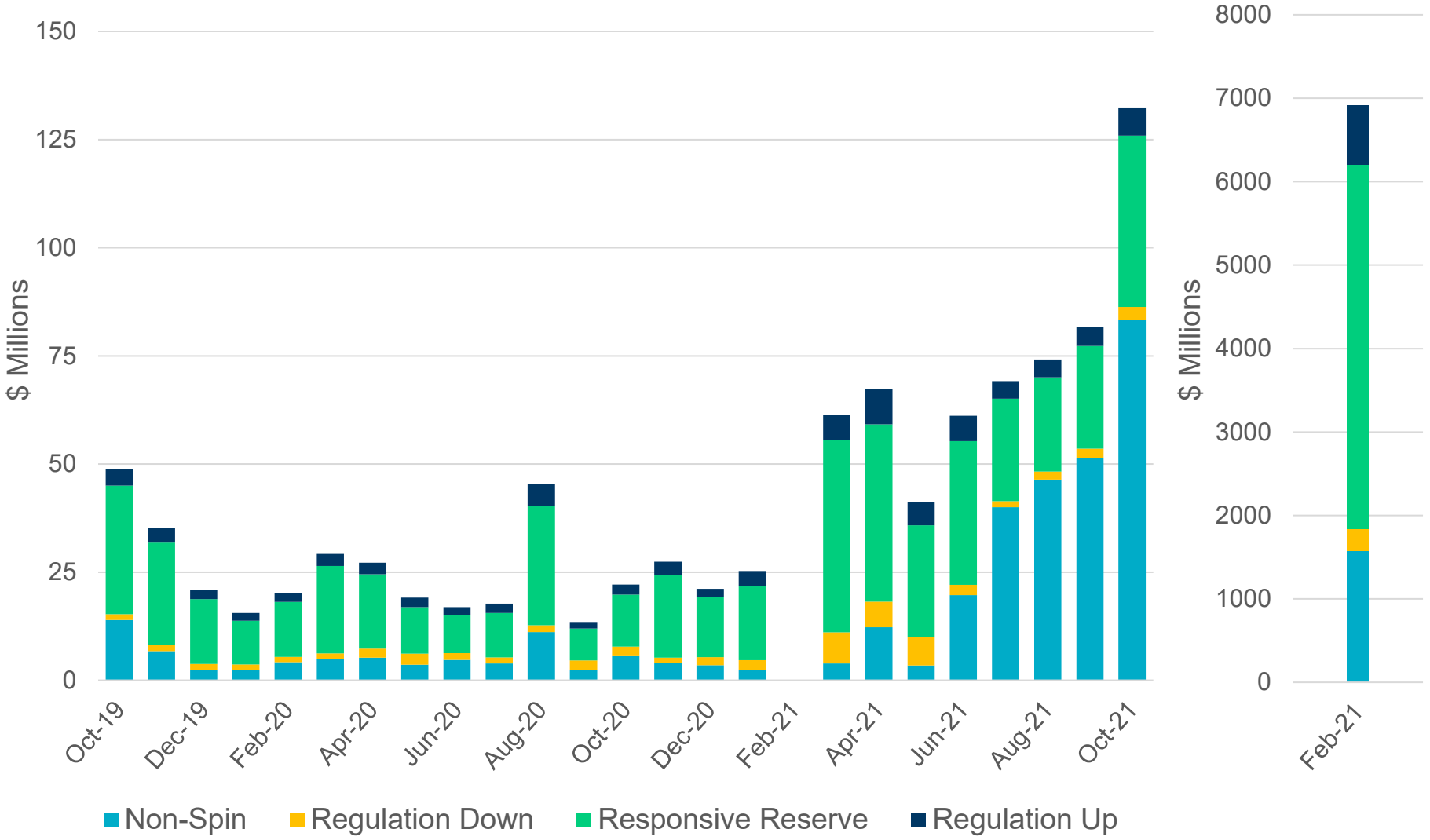
Real-Time Revenue Neutrality Allocated to Load was $2.63M for October 2021



	October 2021 ($M)
Real-Time Energy Imbalance	$143.35
Real-Time Point-to-Point Obligation	($135.04)
Real-Time Congestion from Self-Schedules	$0.11
DC Tie & Block Load Transfer	($11.04)
Load Allocated Revenue Neutrality	**$2.63**

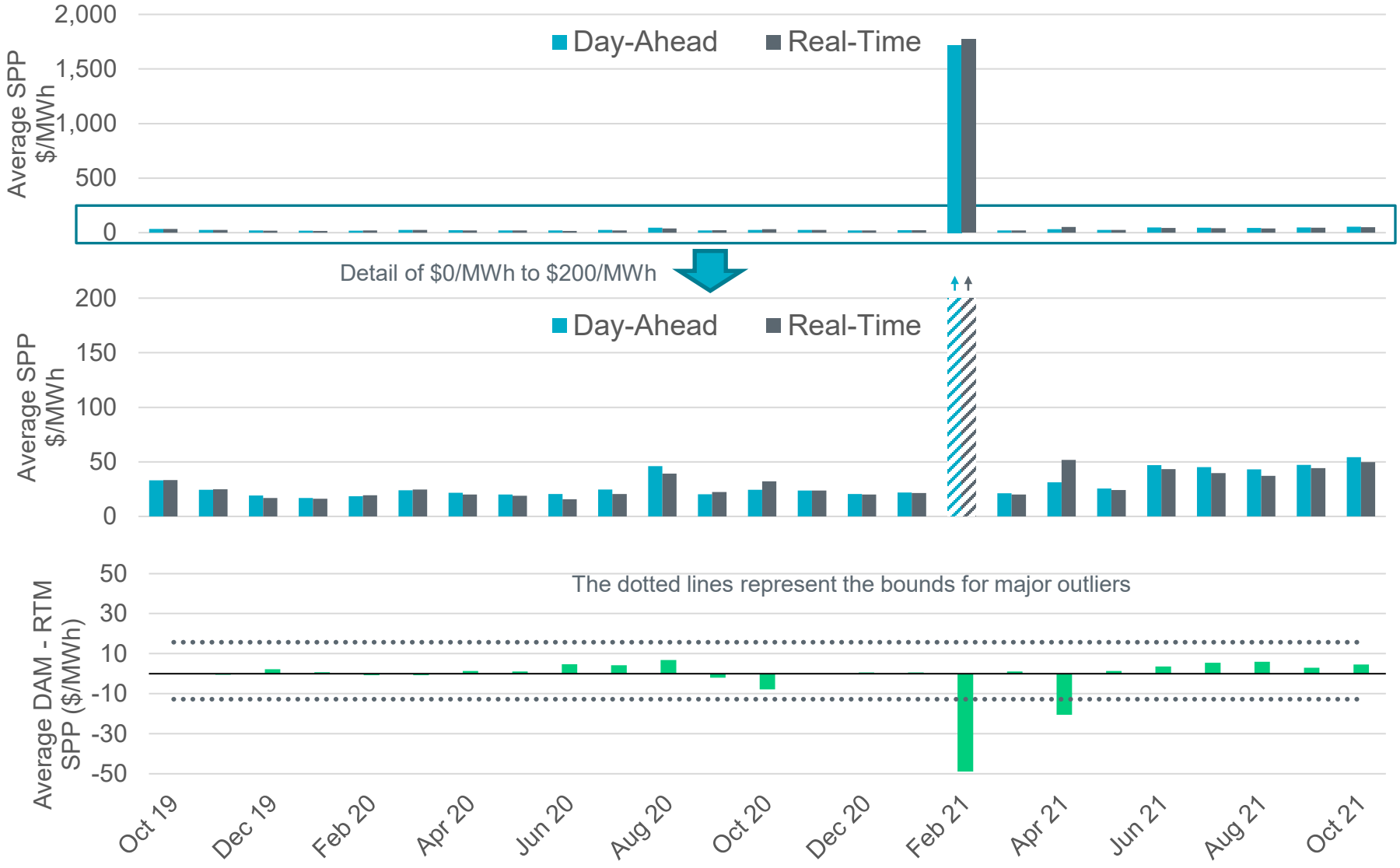
Note: For visual purposes, February 2021 has been separated into its own graph with different scaling. The legend applies for both graphs.

Ancillary Services for October 2021 totaled $132.44M



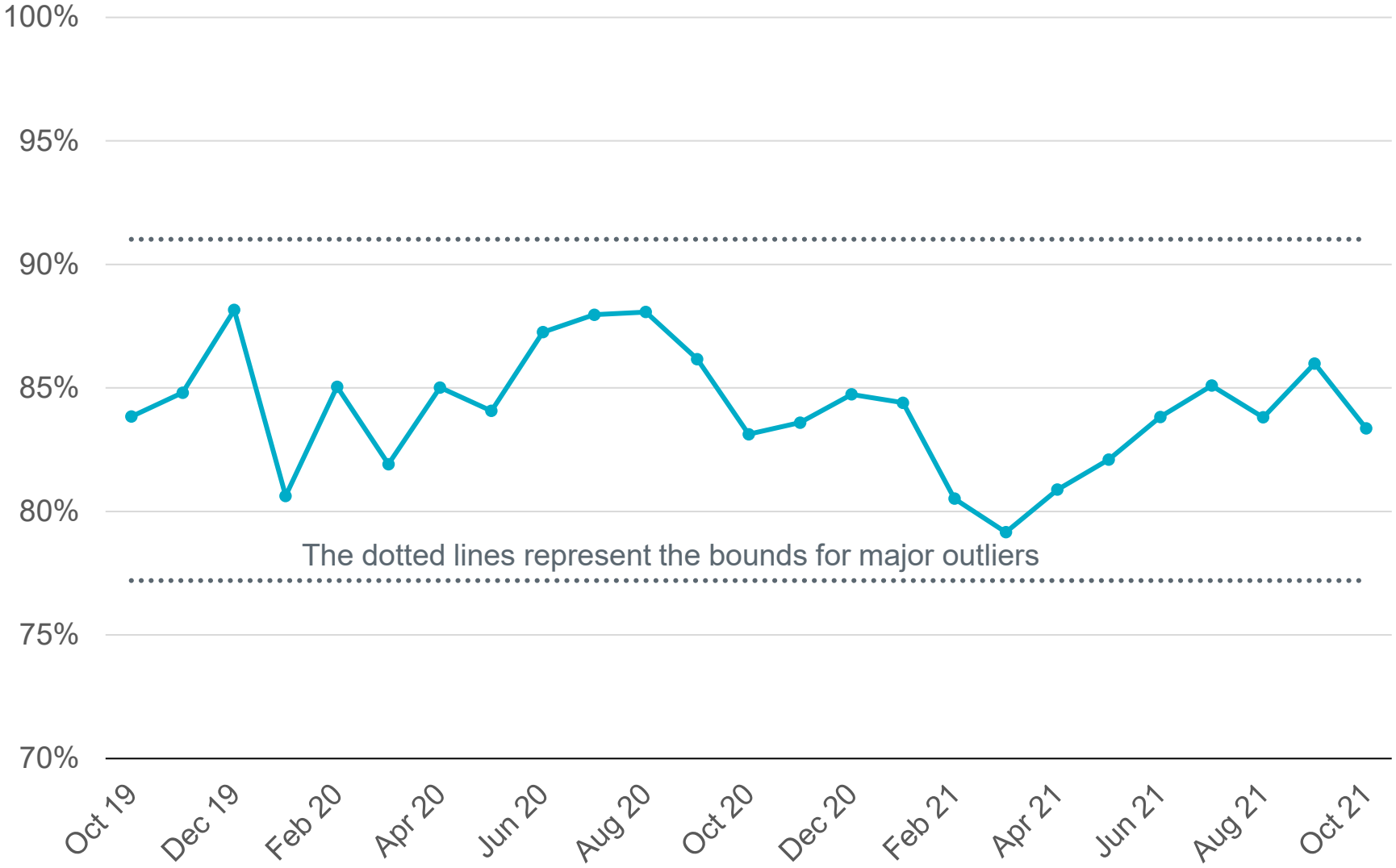
Note: For visual purposes, February 2021 has been separated into its own graph with different scaling. The legend applies for both graphs.

Day-Ahead and Real-Time Market Price Differences

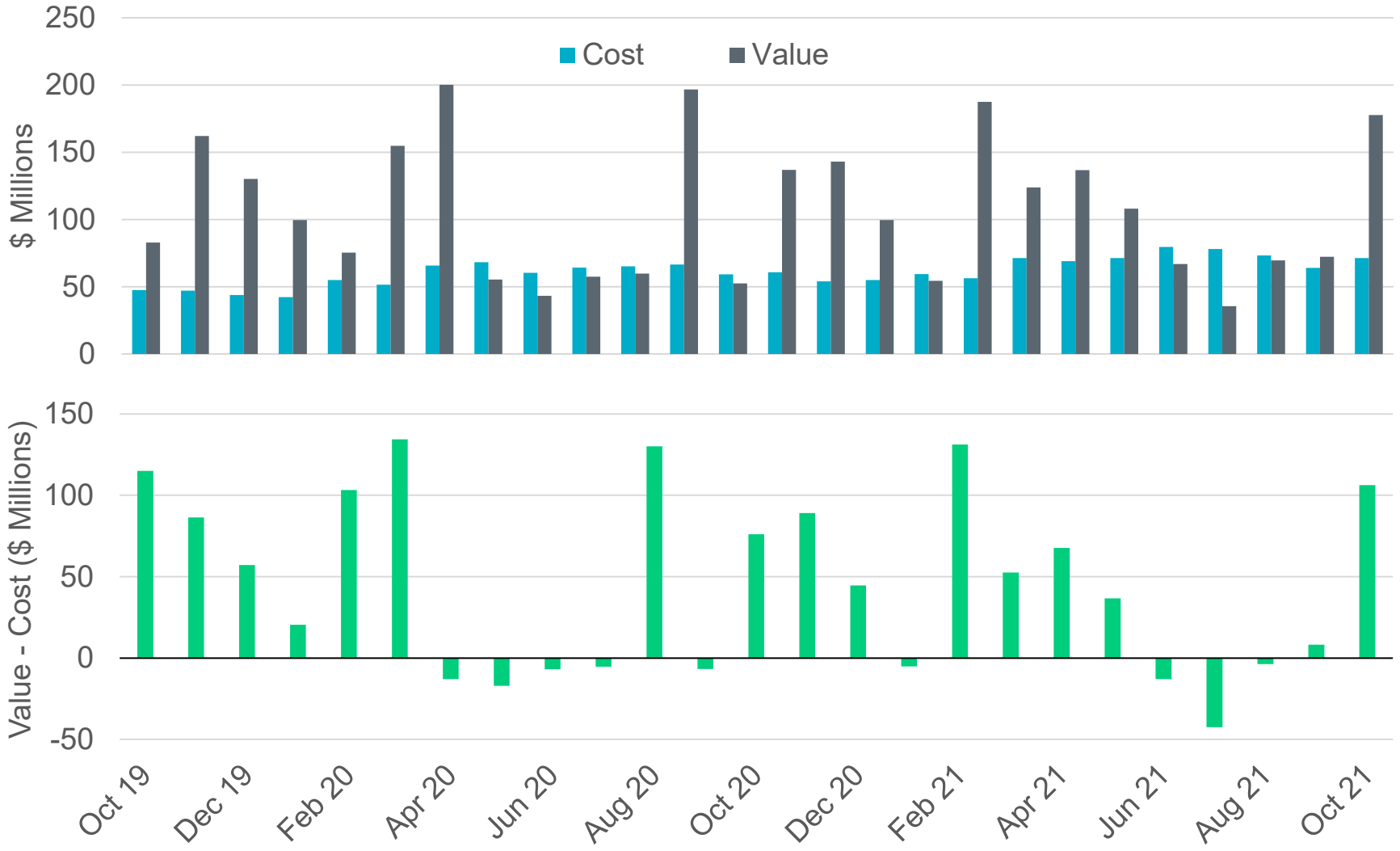


*Averages are weighted by Real-Time Market Load

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



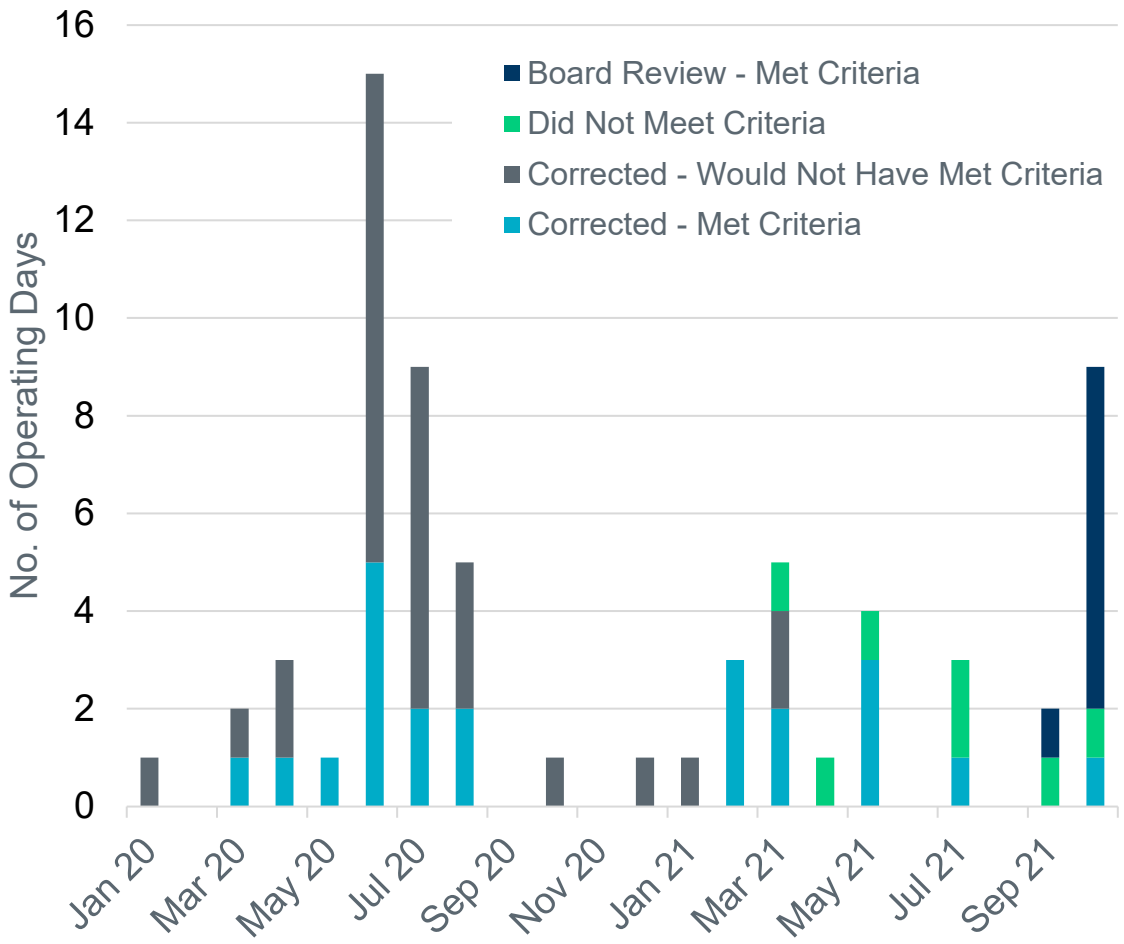
CRR Value and Cost Differences



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 four 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;
- Days that were not corrected because they did not meet the criteria for "significance" under NPRR1024; and
- Days that met the criteria for "significance" under NPRR1024 and are pending Board review.



Details on Price Issues not Meeting the Criteria for Significance

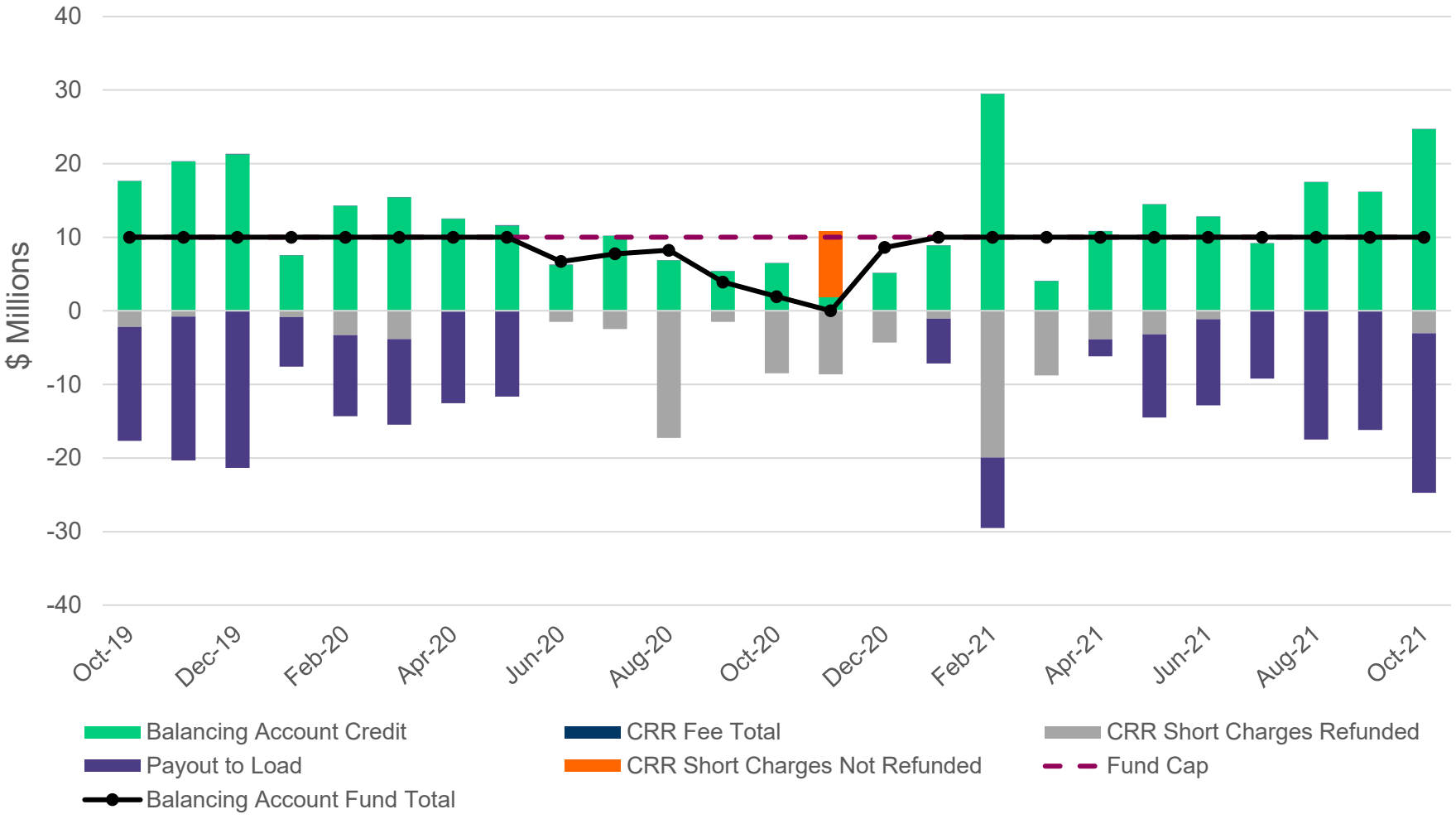
Operating Day Oct. 1, 2021

- The price issue was caused by incorrect Generic Transmission Constraint (GTC) in Day-Ahead Market (DAM) model. ERCOT determined that the modeling error potentially impacted Operating Days (ODs) September 30, 2021, to October 13, 2021.

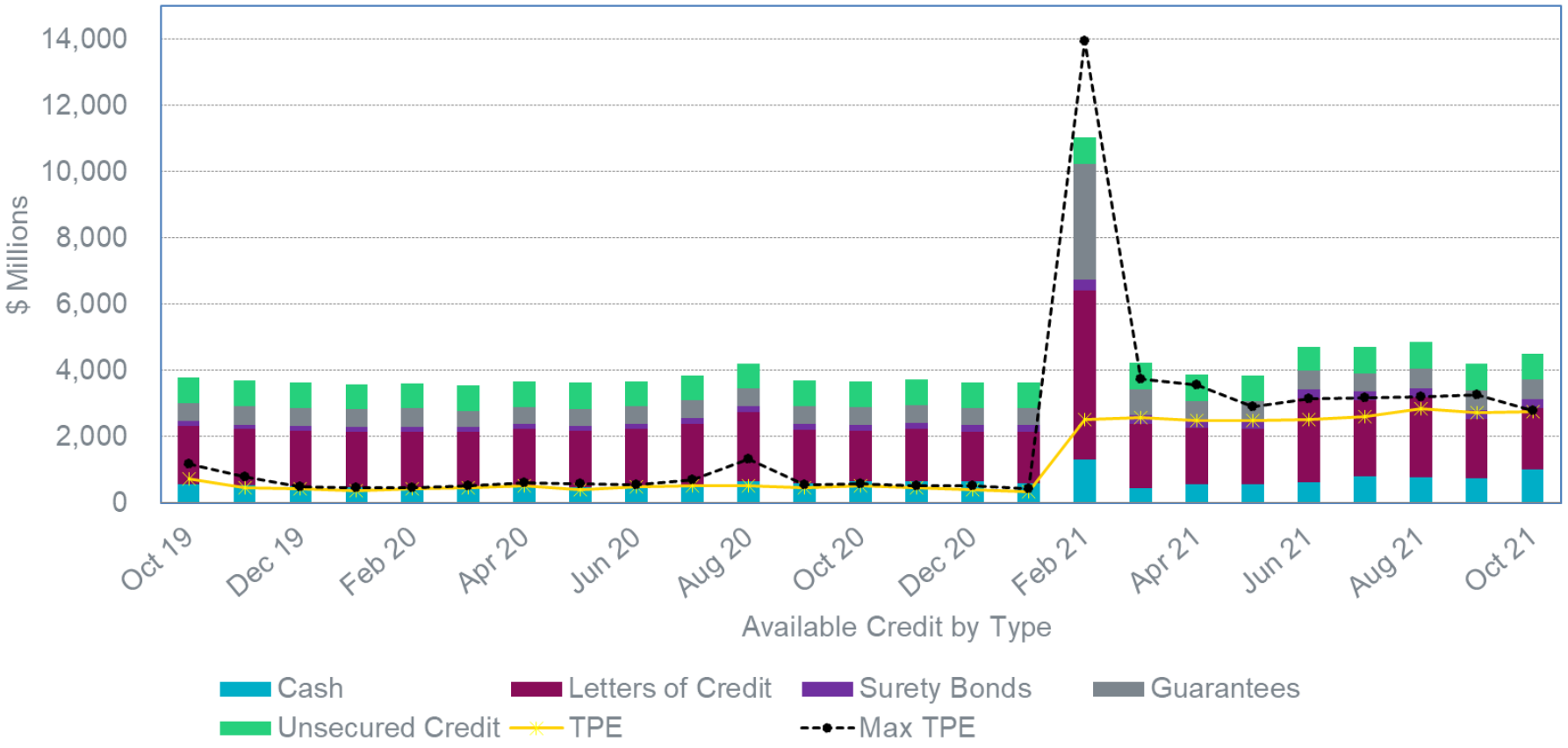
- For the impacted ODs, ERCOT reran DAM cases with the corrected GTC definition to determine price and settlement impacts. For OD October 1, 2021, it was determined that the prices were impacted by the modeling error but did not meet the “significant” threshold in Protocol Section 4.5.3 (6)(b) for seeking correction of prices by the ERCOT Board.

- ERCOT will request that the Board review and consider the potential price correction for ODs September 30, 2021, and October 6 to 12, 2021, as the impacts of those ODs were considered “significant” under Protocol 4.5.3 (6)(b).

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 – October 2021

	Year-To-Date		Transactions Received	
Transaction Type	October 2021	October 2020	October 2021	October 2020
Switches	1,114,562	983,750	56,991	98,008
Acquisitions	48,862	0	0	0
Move - Ins	2,354,520	2,306,969	233,687	244,865
Move - Outs	1,087,330	1,115,452	105,290	112,080
Continuous Service Agreements (CSA)	588,545	413,354	77,849	43,823
Mass Transitions	26,584	0	0	0
Total	5,220,403	4,819,525	473,817	498,776