ERCOT Monthly Operational Overview
(June 2019)

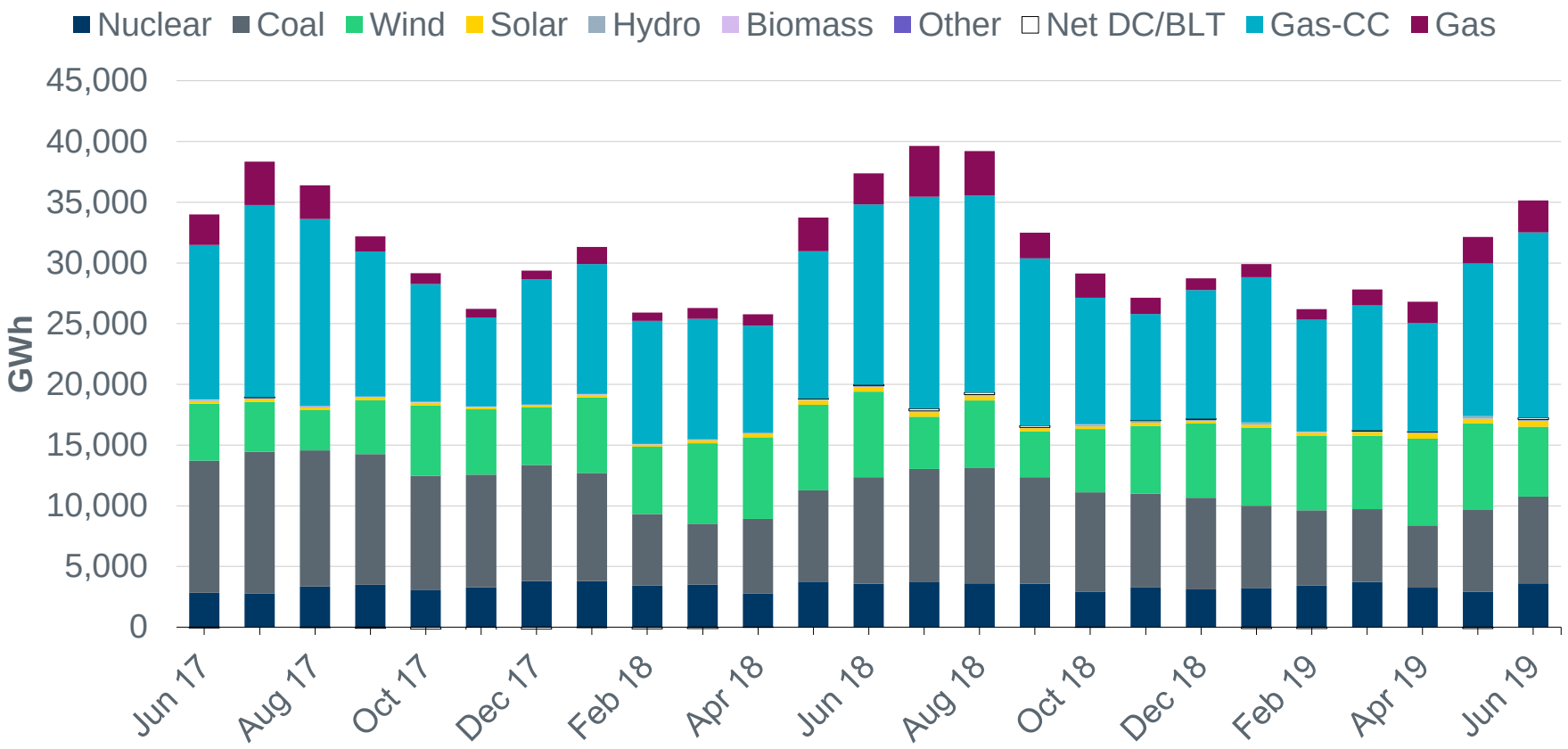
ERCOT Public
July 15, 2019

Monthly Highlights

- The maximum demand in June 2019 was 68,124 MW*, a 999 MW decrease from the June 2018 peak demand of 69,123 MW.
- Monthly year over year minimum demand was lower for the first time since August 2017 (Note that Hurricane Harvey impacted demand in August 2017).
- June 2019 was the coolest June for Texas since 2007.
- ERCOT issued five notifications:
  - Five Advisories issued due to Physical Responsive Capability being below 3000 MW.

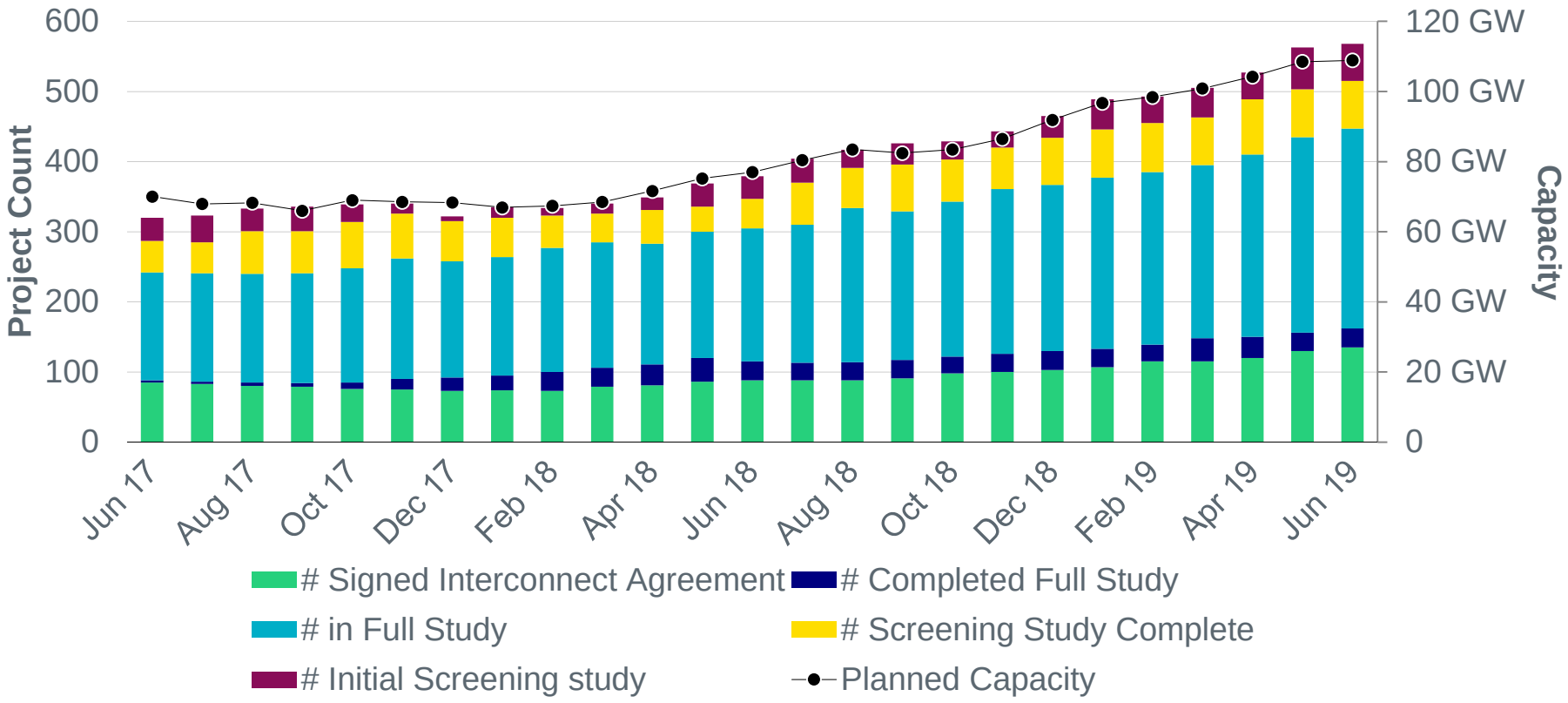
* Preliminary value from July release of Demand and Energy 2019 report.

Monthly energy generation by fuel type



Data for latest two months are based on preliminary settlements.

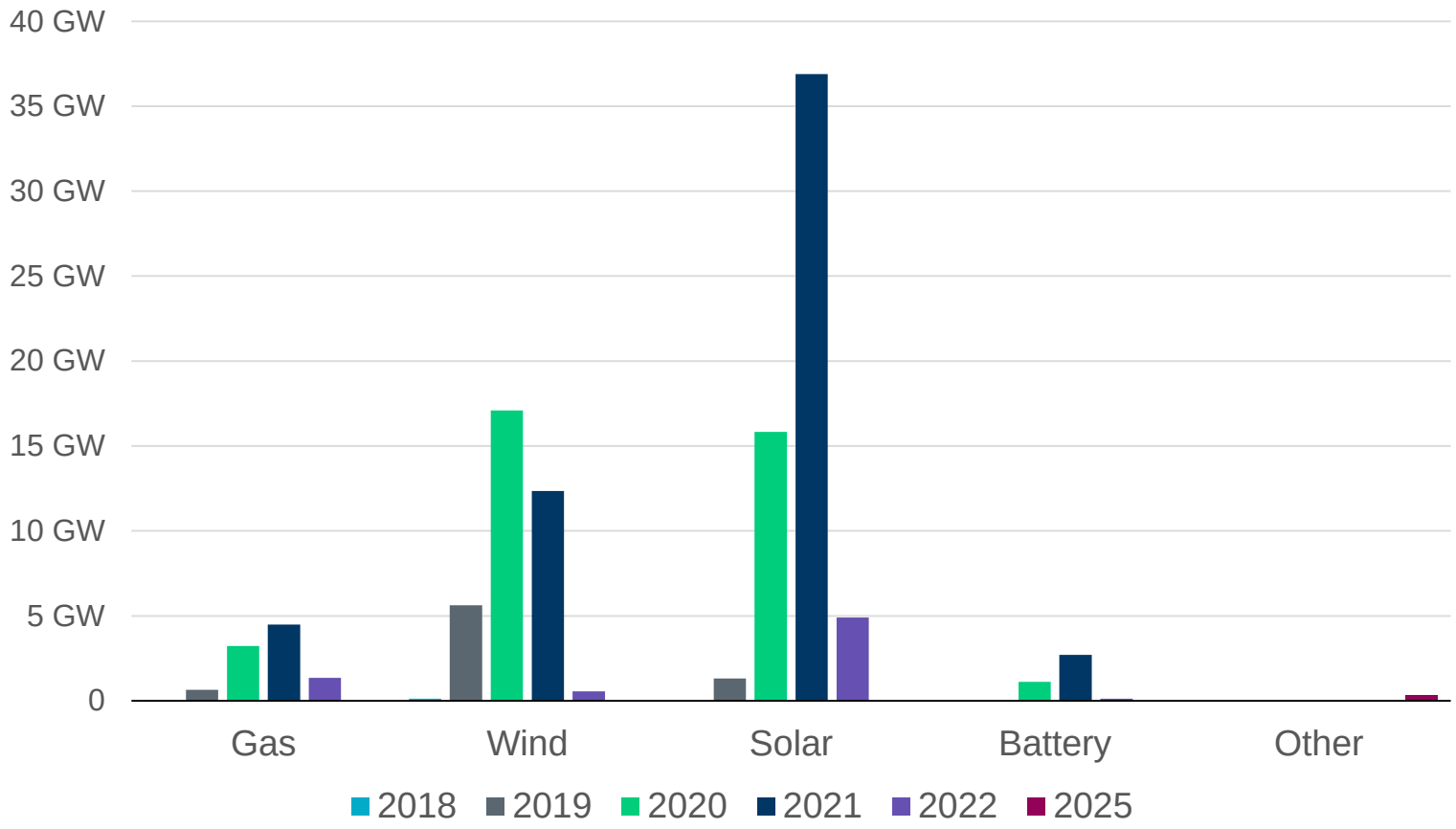
Generation Interconnection activity by project phase



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 59 GW (54%), Wind 36 GW (33%), Gas 10 GW (9%), Battery 4 GW (4%)



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 currently tracking 568 active generation interconnection requests totaling 108,896 MW. This includes 59,161 MW of solar projects and 35,739 MW of wind projects as of June 30, 2019.

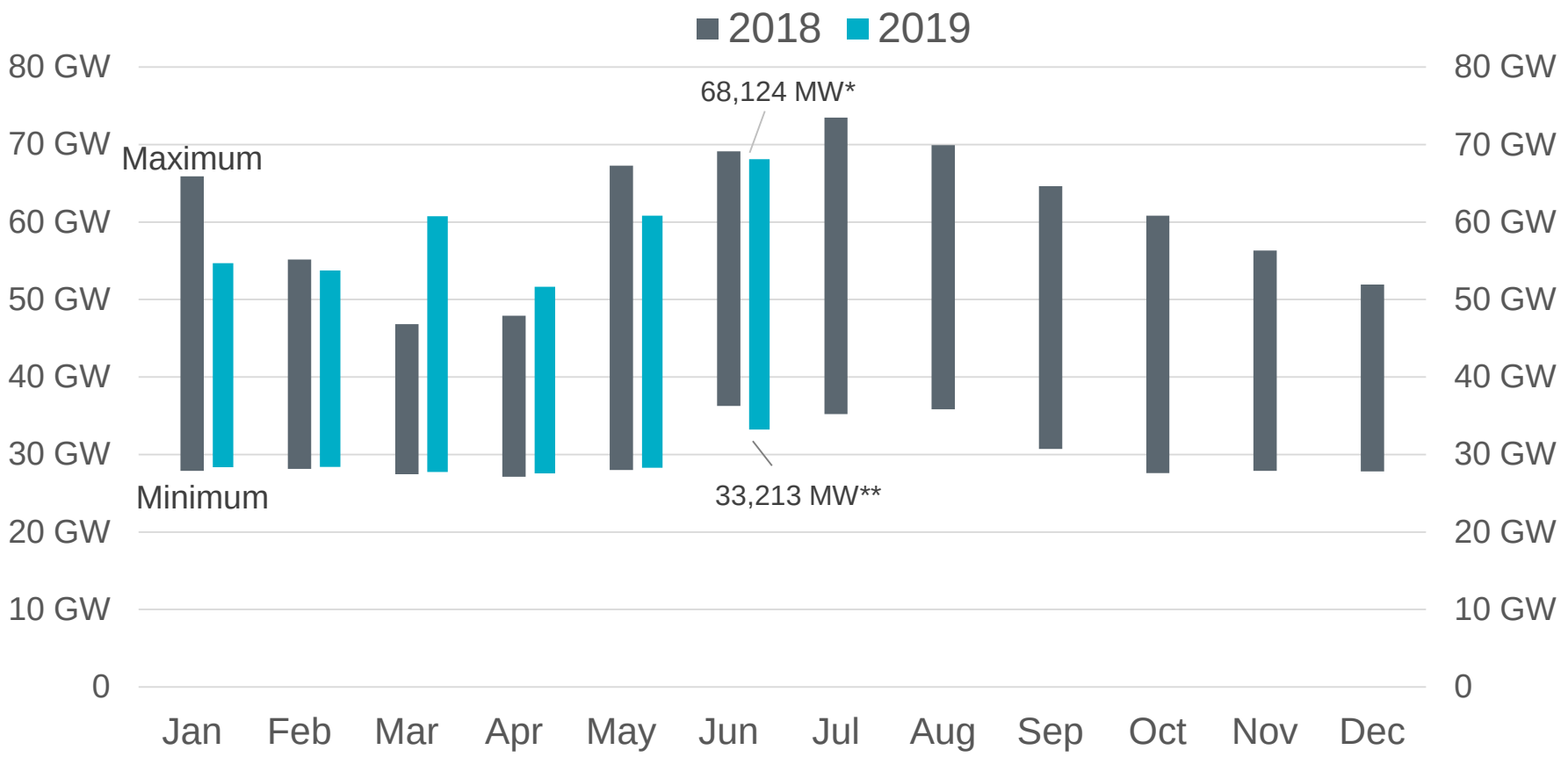
- ERCOT is currently reviewing proposed transmission improvements with a total estimated cost of $1,148.42 Million as of June 30, 2019.

- Transmission Projects endorsed in 2019 total $244.3 Million as of June 30, 2019.

- All projects (in engineering, routing, licensing and construction) total approximately $3.86 Billion as of June 1, 2019.

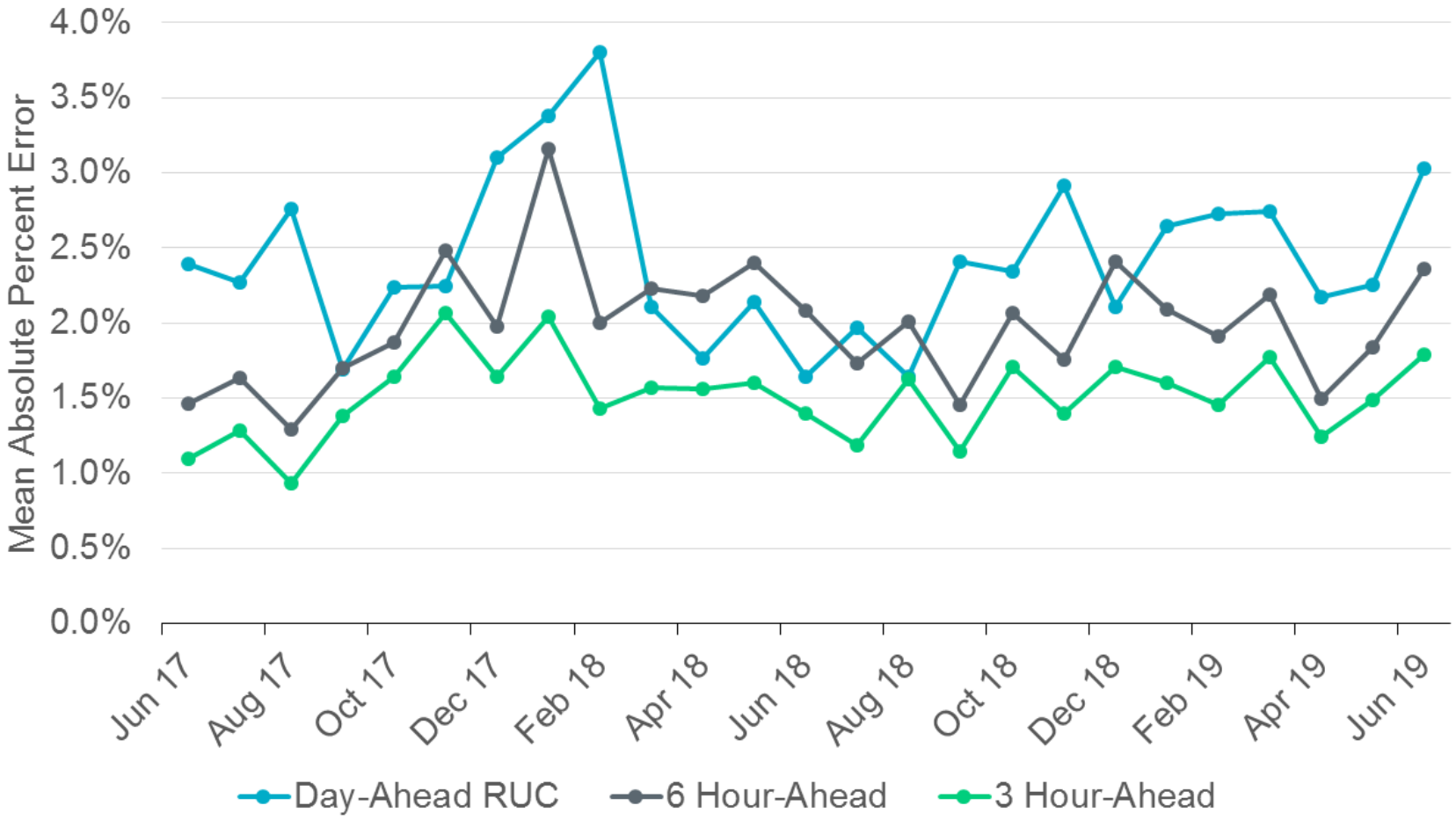
- Transmission Projects energized in 2019 total about $1.06 Billion as of June 1, 2019.

The maximum demand in June 2019 was 68,124 MW*, a 999 MW decrease from the June demand record of 69,123 MW set last year



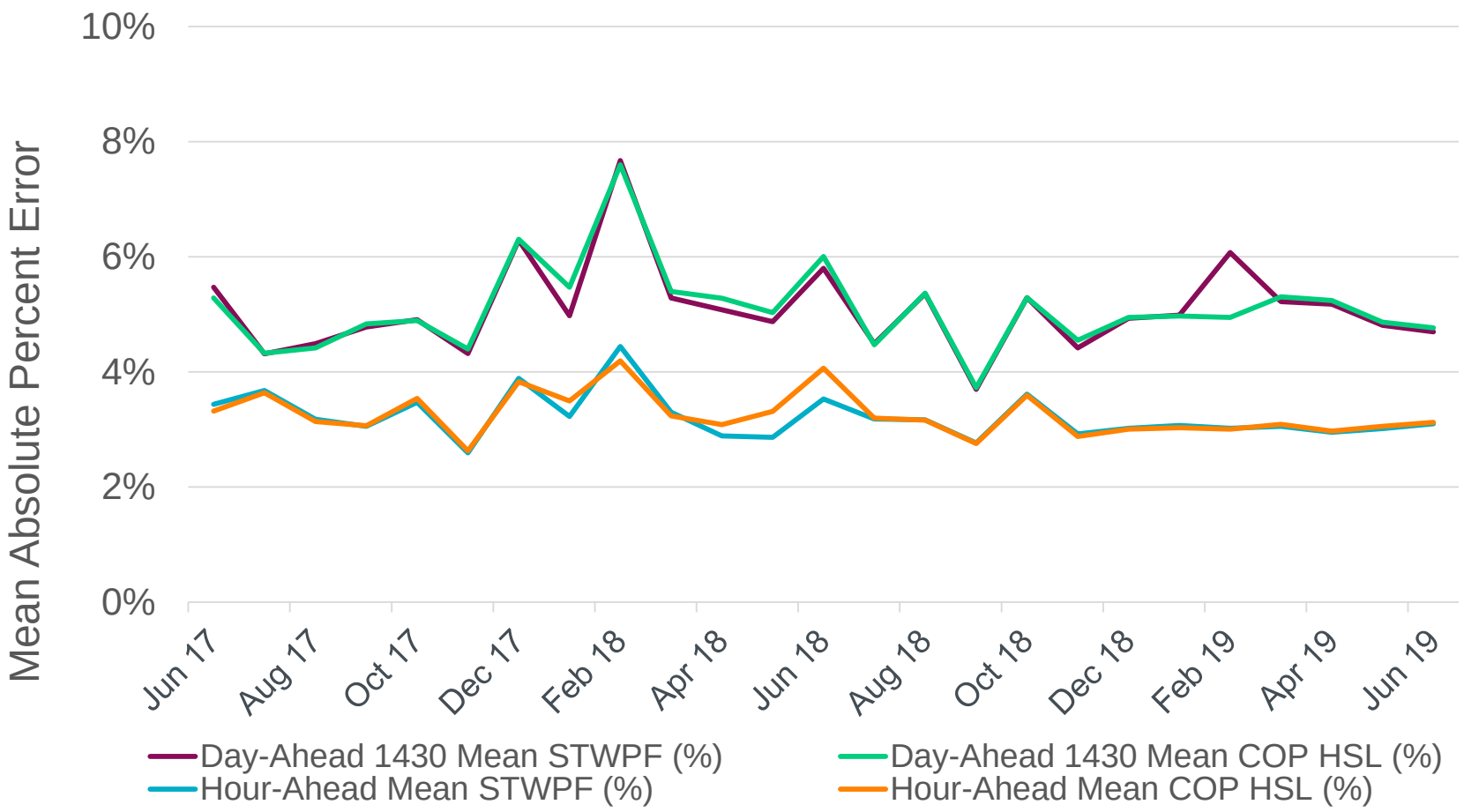
*Value based on net system hourly data from July release of Demand and Energy 2019 report.
**Value based on 15-minute metered data from July release of Demand and Energy 2019 report.
Data for latest two months are based on preliminary settlements.

Mid-Term Load Forecast Performance



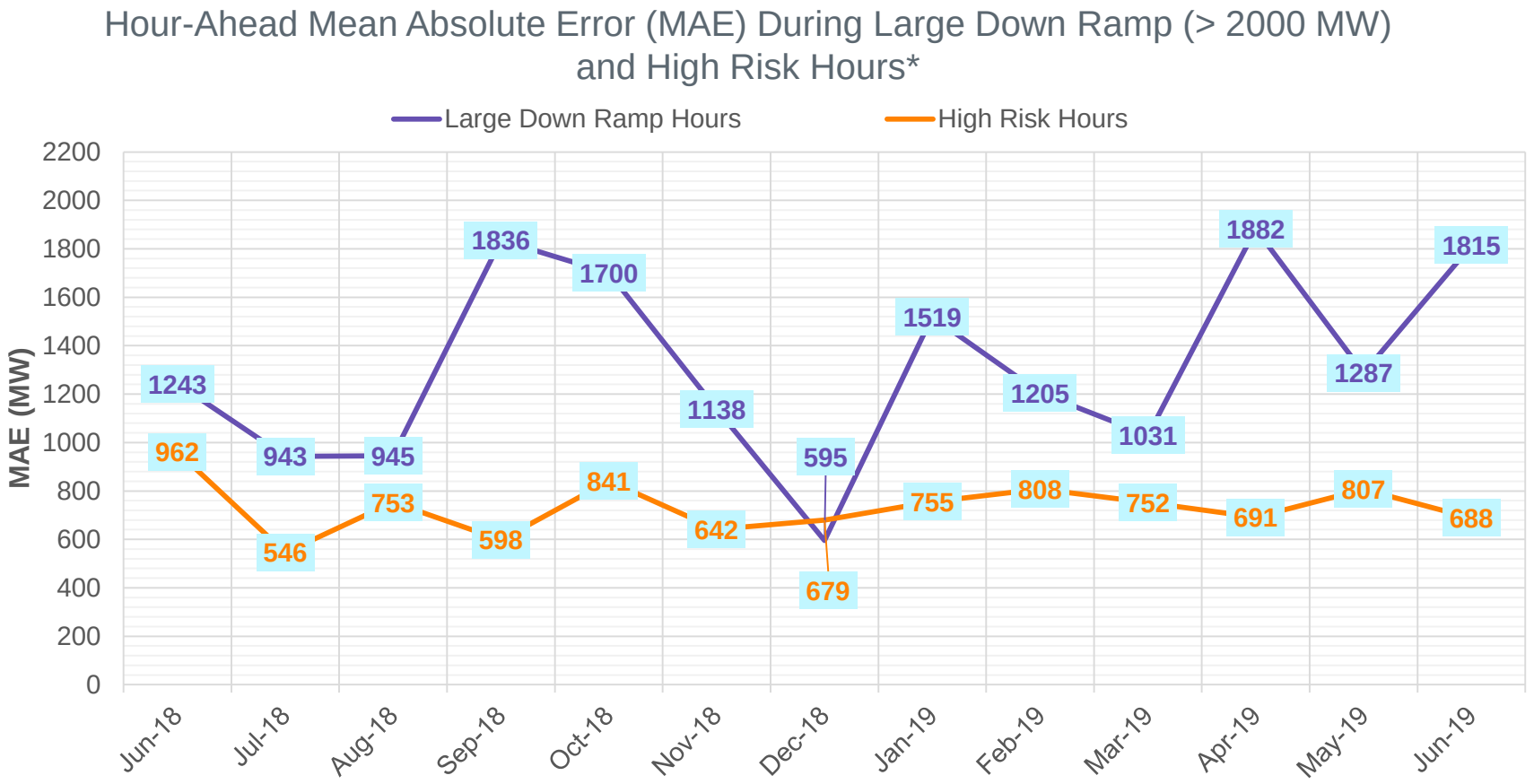
The Mid-Term Load Forecast is an hourly forecast that looks 7 days into the future

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.

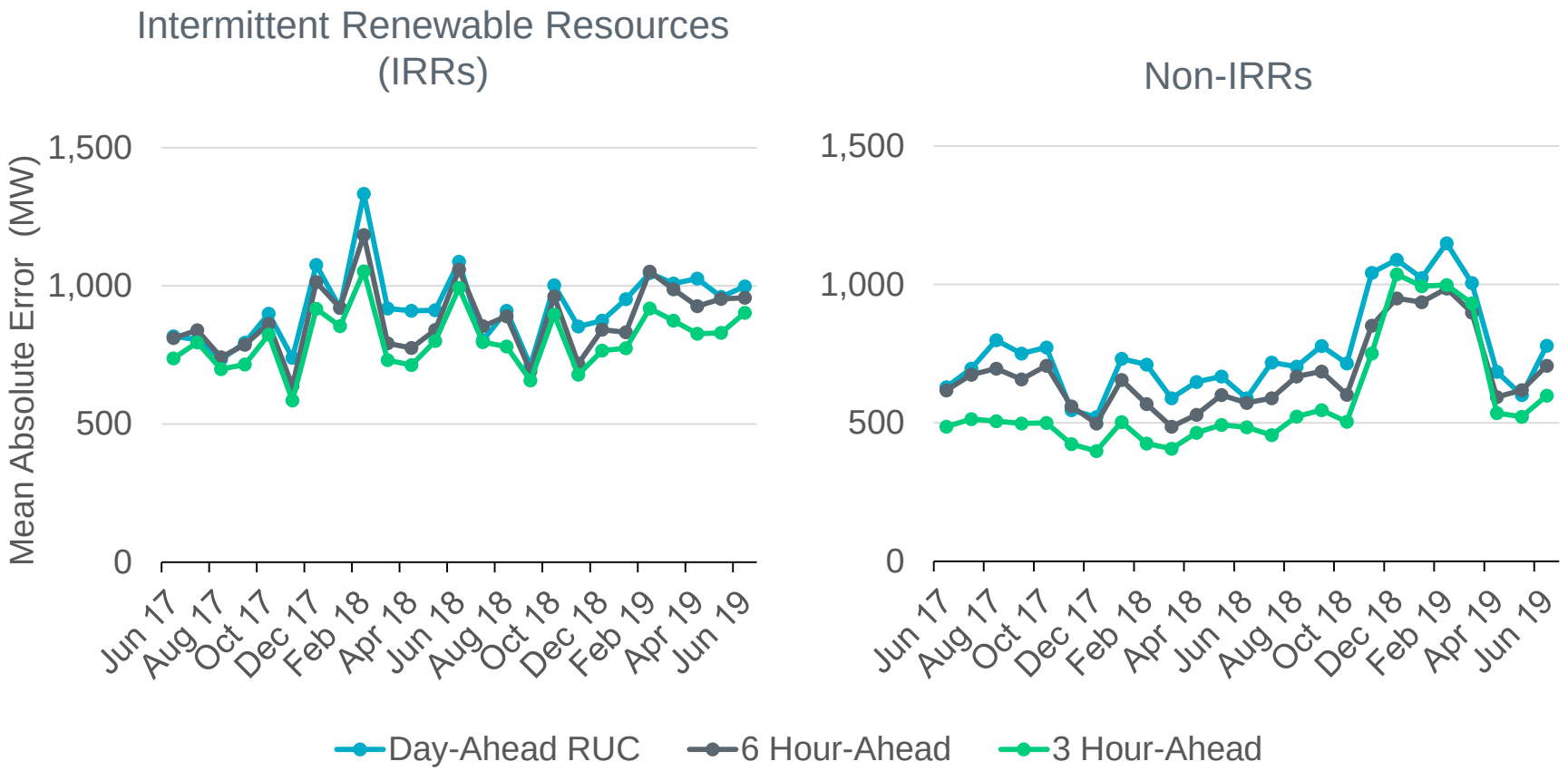
Hour-Ahead Wind Forecast Performance



**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.*

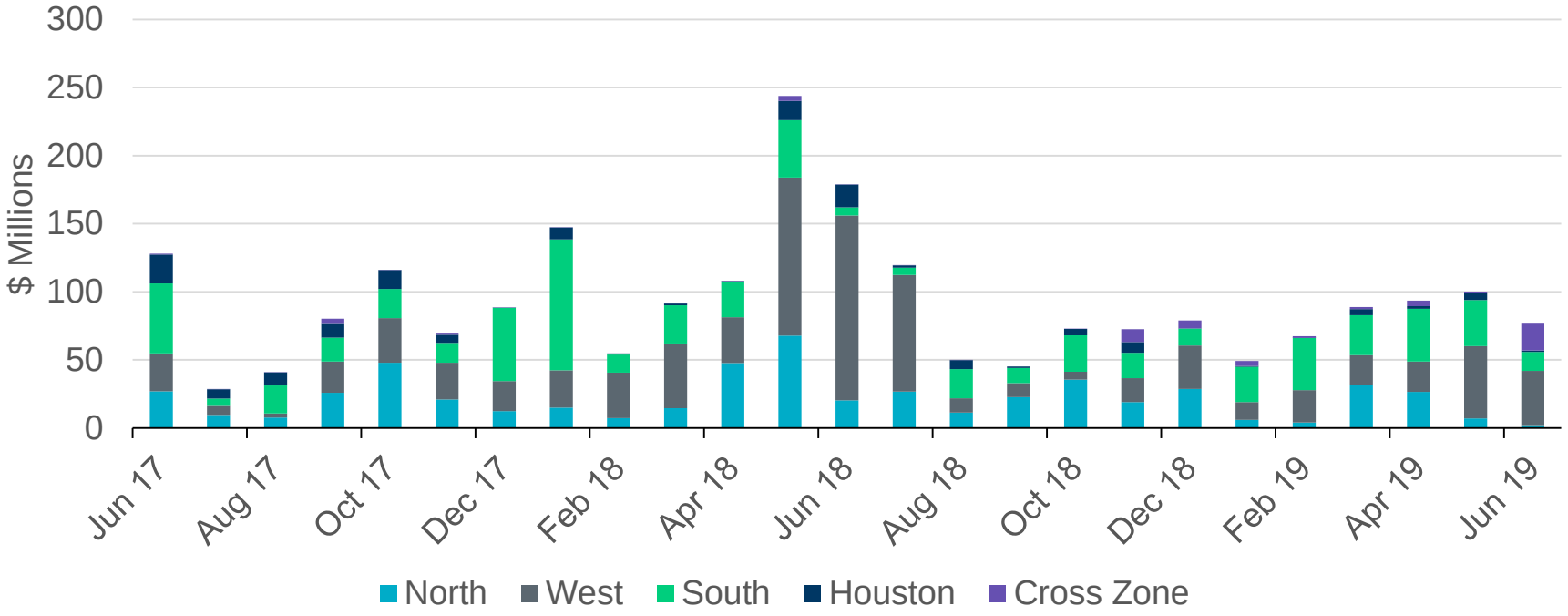
Forecast performance during large down ramp (wind ramp > 2000 MW) hours and high risk hours (historic risk of load ramping up and wind ramping down is high) is focused upon. Note that for the purposes of forecast performance measurement every hour in a month is classified as either a large down ramp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



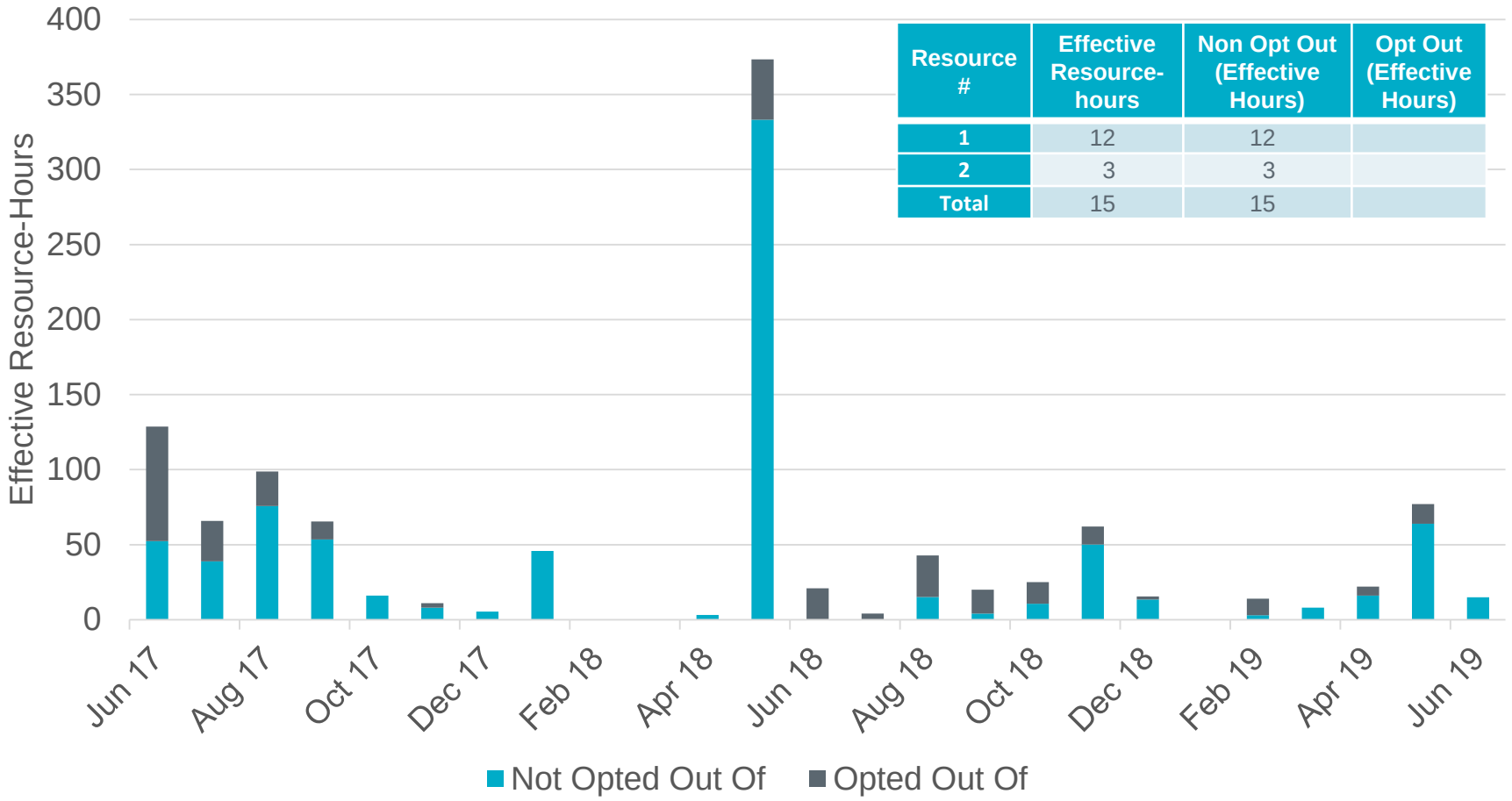
- COPs for IRRs are derived from wind and solar forecasts from ERCOT with any adjustments from Qualified Scheduling Entities.
- The installed capacity of approved IRRs is 24,195 MW (as of June 30, 2019).

Real-Time Congestion Rent by Zone



- The congestion rent in the Cross Zone category increased significantly in June compared to May in part due to the constraints DWAPHLJ5: JCKSTP18_A and DWAPHLJ5: DOWSTP27_A . The congestion rent in the other zones decreased in June compared to May.
- 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.

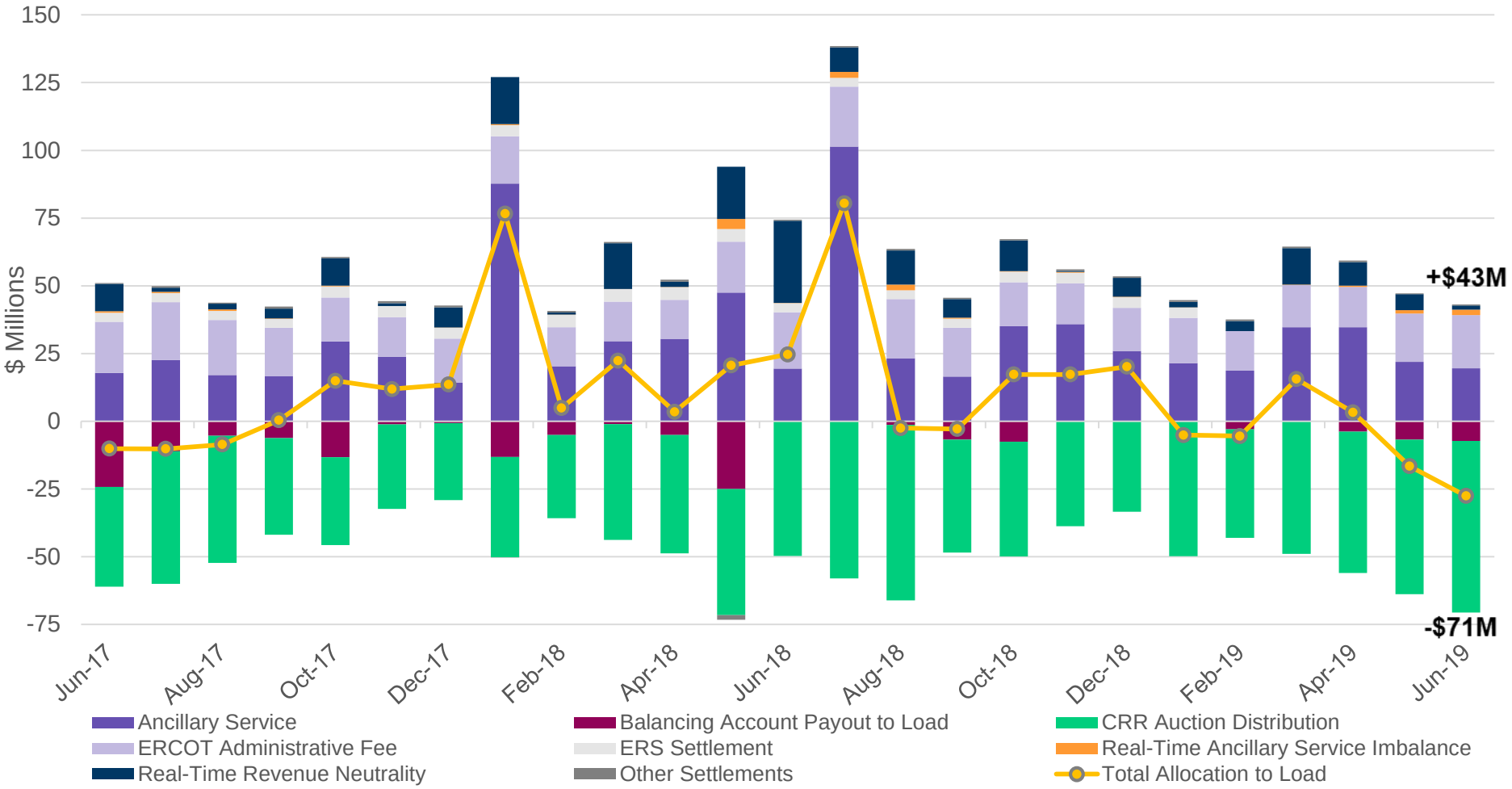
2 Unique Resources Committed in June for Congestion



Resource #	Effective Resource-hours	Non Opt Out (Effective Hours)	Opt Out (Effective Hours)
1	12	12	
2	3	3	
Total	15	15	

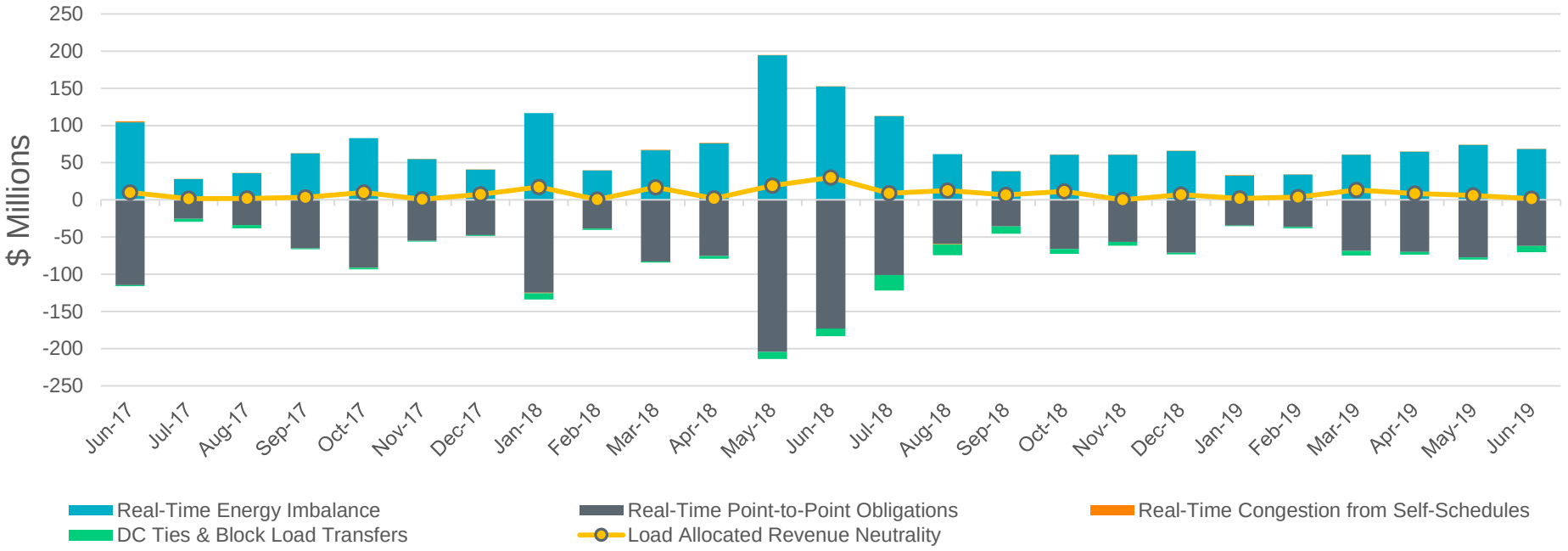
"Effective Resource-Hours" excludes any period during a Reliability Unit Commitment hour when the RUC-committed Resource was starting up, shutting down, or off-line.

Net Allocation to Load in June 2019 was -$27.6 Million



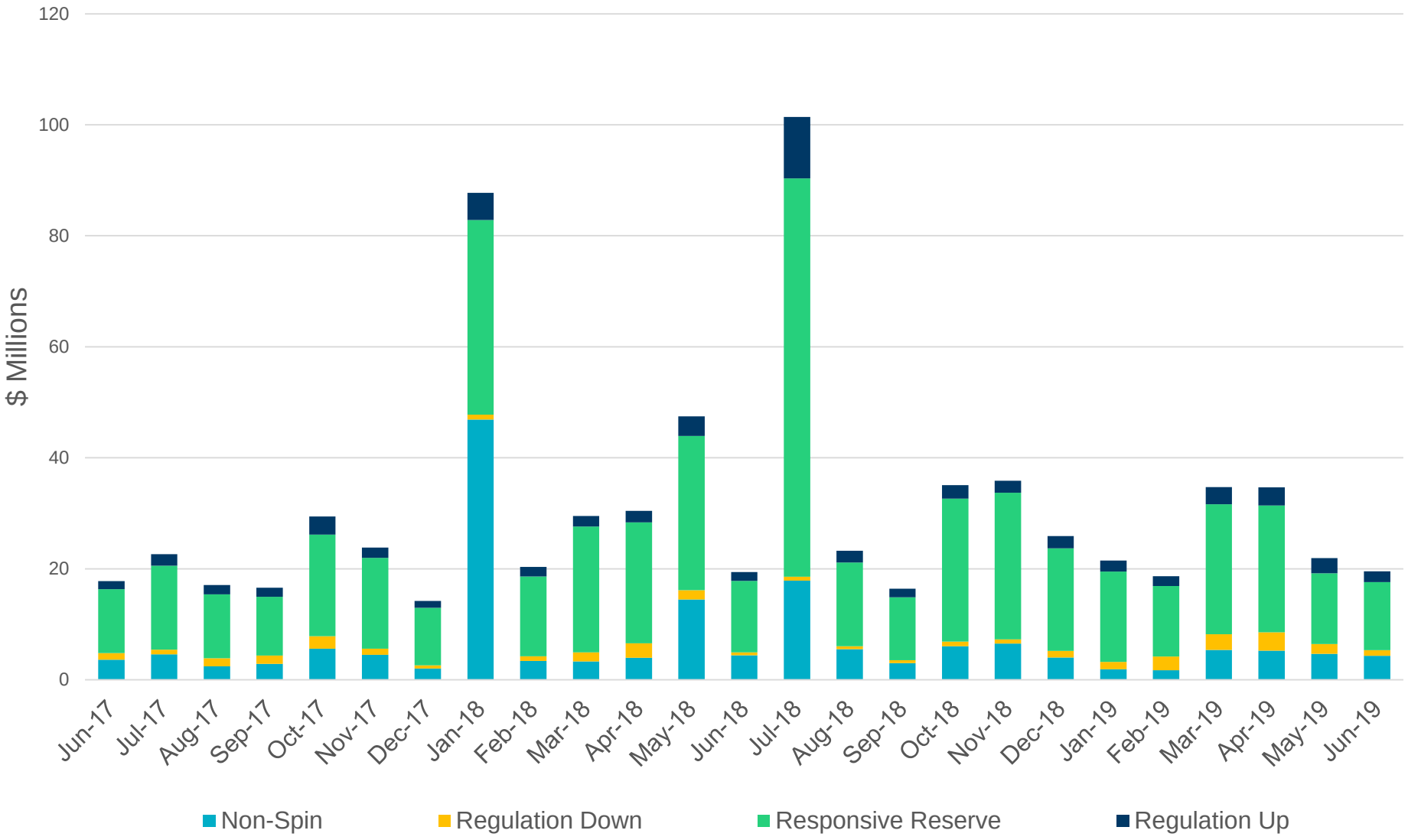
This information is available in tabular form in the Settlement Stability Report presented quarterly to the Market Settlement Working Group and Wholesale Market Subcommittee

Real-Time Revenue Neutrality Allocated to Load was $1.55M for June 2019

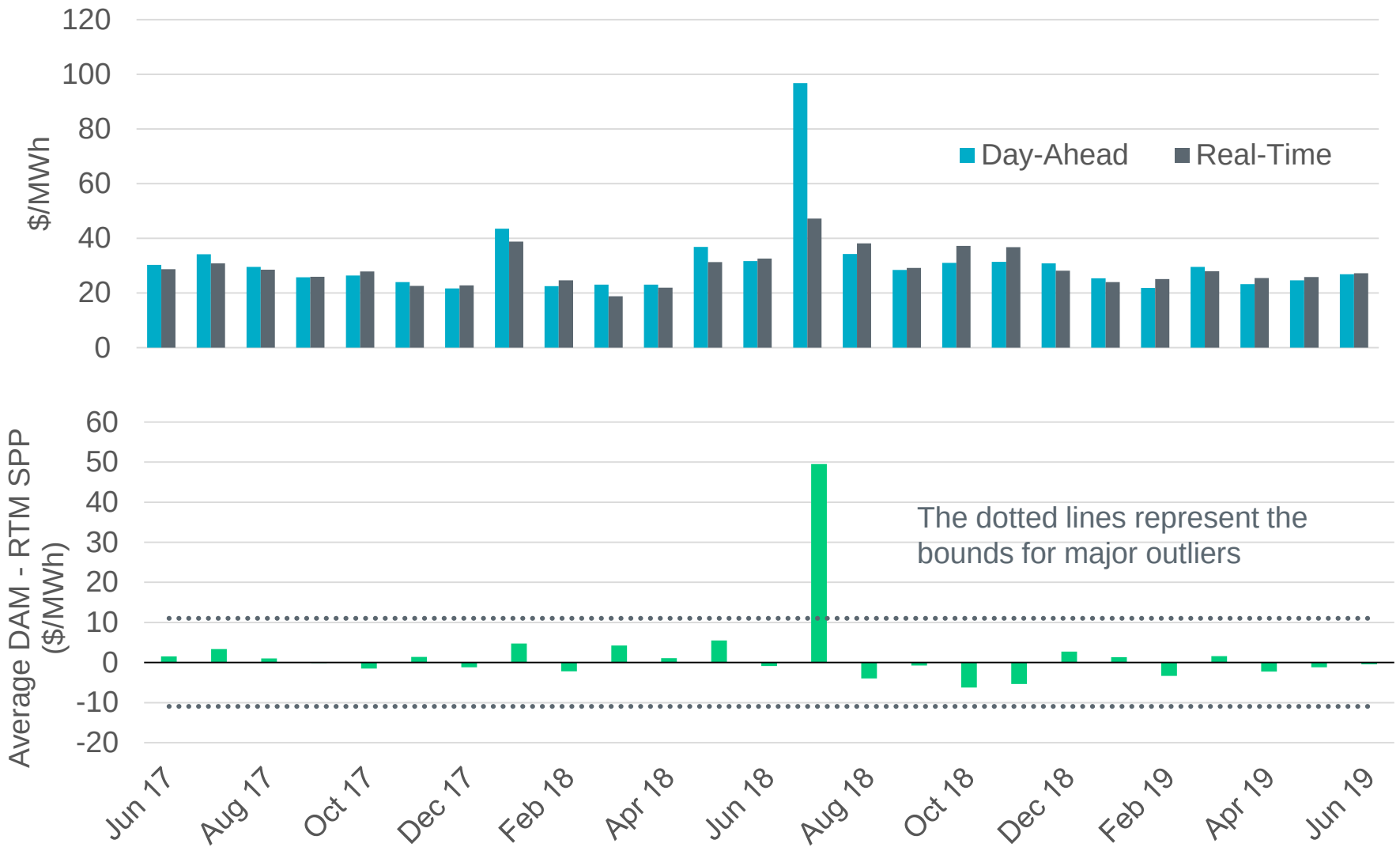


	June 2019 ($M)
Real-Time Energy Imbalance	$68.57
Real-Time Point-to-Point Obligation	($61.86)
Real-Time Congestion from Self-Schedules	$0.27
DC Tie & Block Load Transfer	($8.53)
Load Allocated Revenue Neutrality	**$1.55**

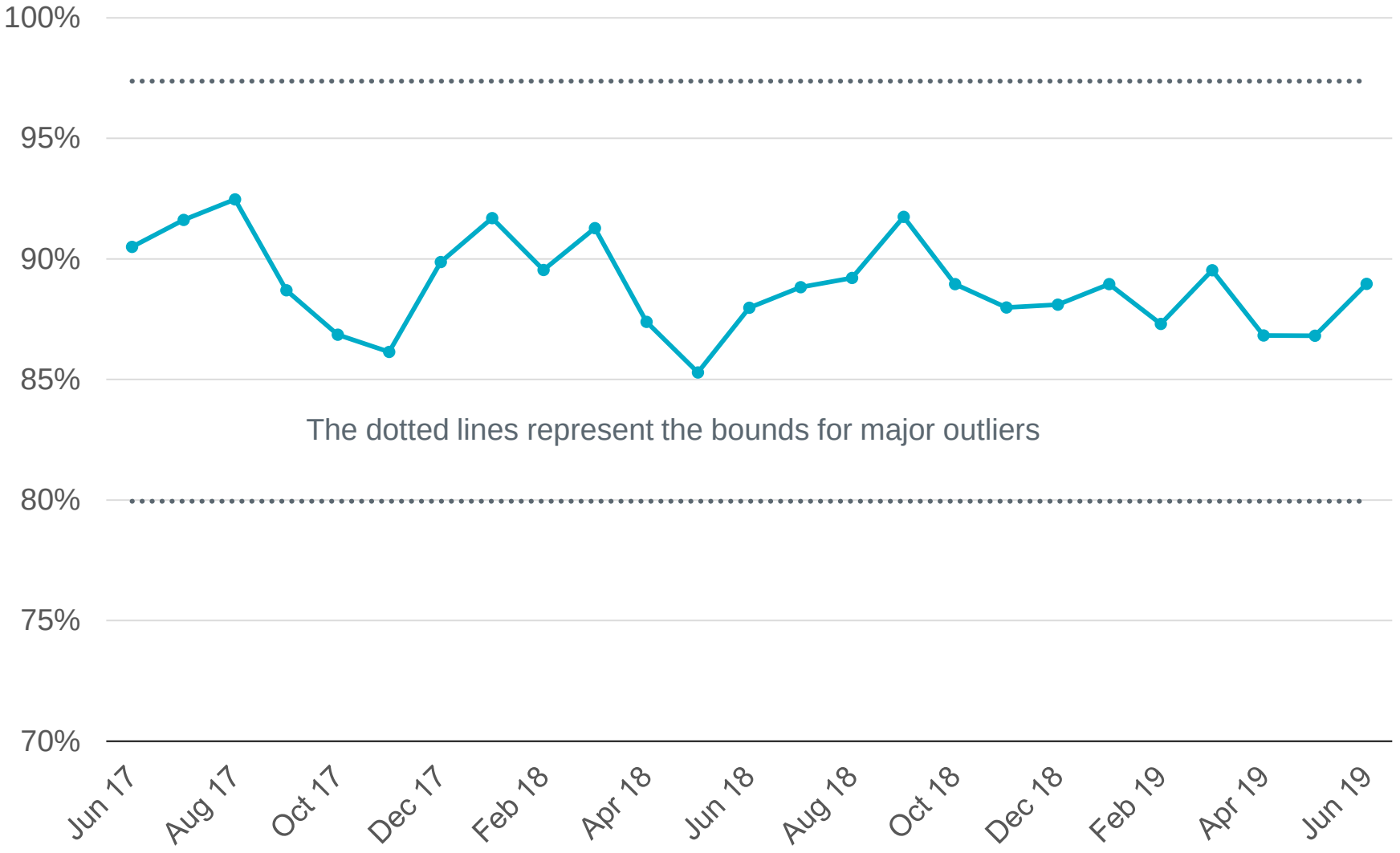
Ancillary Services for June 2019 totaled $19.56M



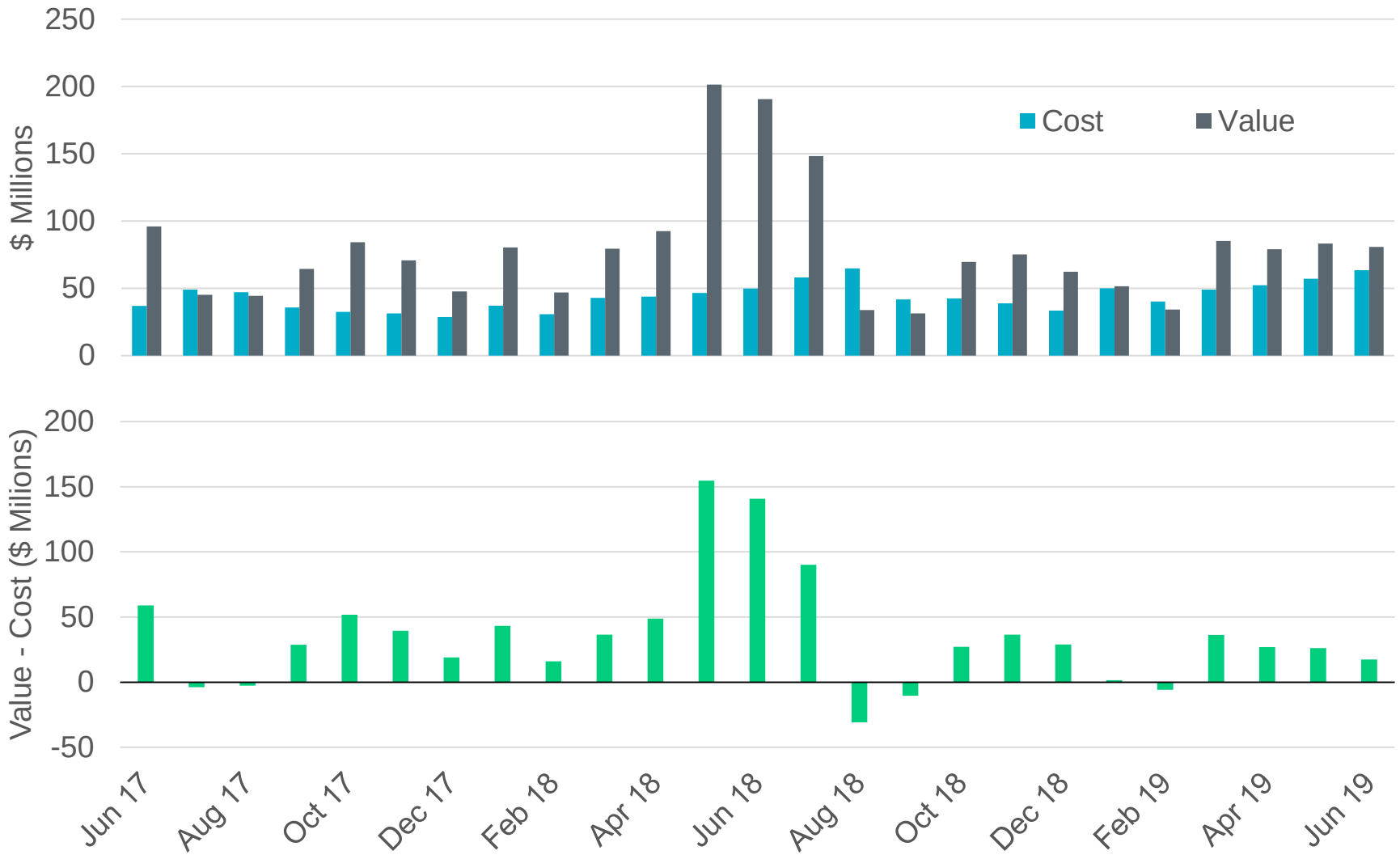
Day-Ahead and Real-Time Market Price Differences



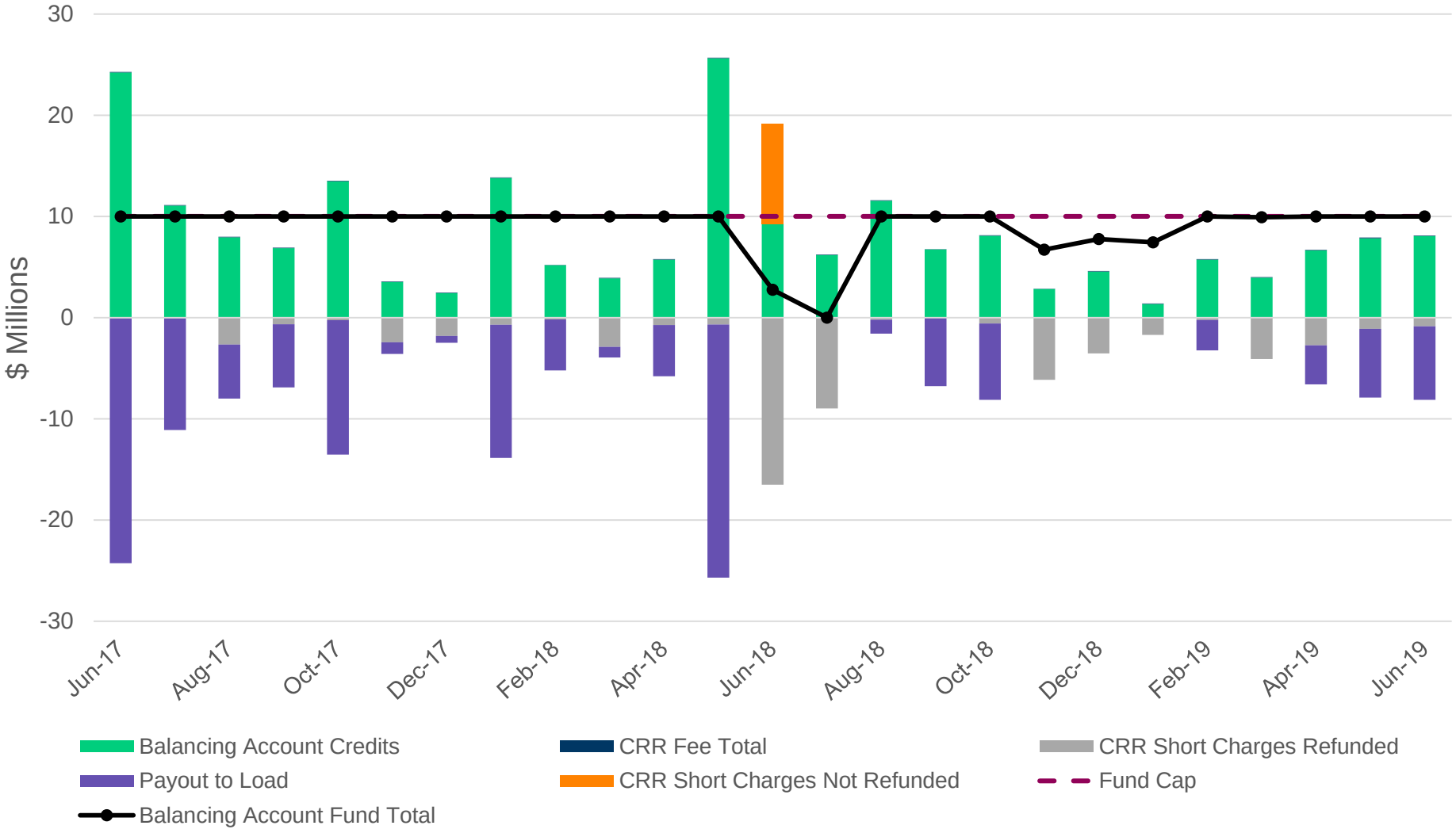
Percentage of Real-Time Load Transacted in the Day-Ahead Market



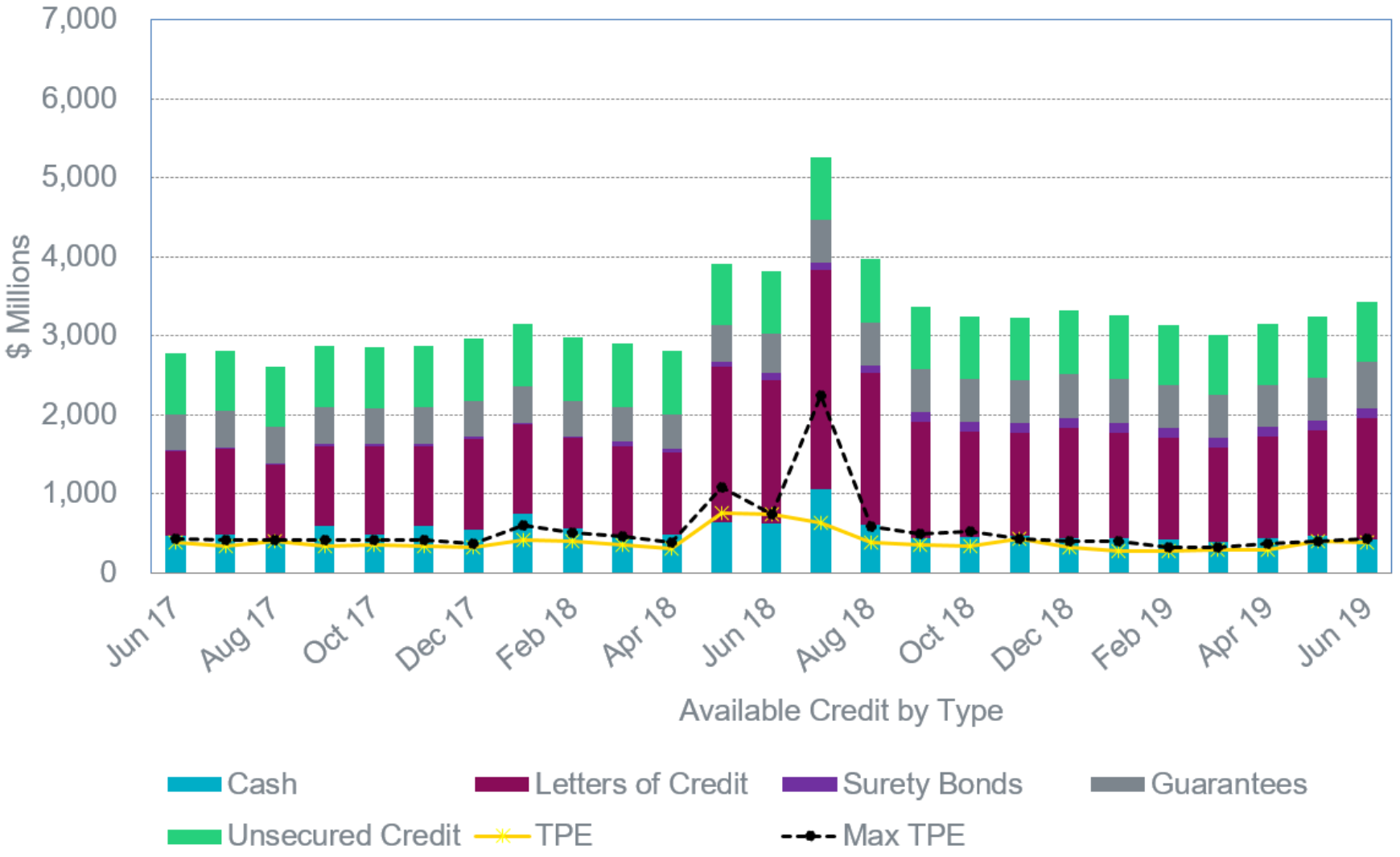
CRR Value and Cost Differences



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



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



Retail Transaction Volumes – Summary – June 2019

	Year-To-Date		Transactions Received	
Transaction Type	**June 2019**	**June 2018**	**June 2019**	**June 2018**
Switches	687,049	547,983	126,031	109,653
Acquisition	0	0	0	0
Move - Ins	1,439,083	1,396,915	255,608	257,125
Move - Outs	668,550	684,760	120,918	125,861
Continuous Service Agreements (CSA)	616,415	355,727	83,122	62,083
Mass Transitions	0	9,034	0	0
Total	**3,411,097**	**2,994,419**	**585,679**	**554,722**