



Review of July and August Reliability Unit Commitments for Capacity

Wholesale Market Subcommittee

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October 10, 2018

Summary of RUC Instructions for Capacity

- Count of RUC-Instructed Resource-Hours
 - Resources are not necessarily available for dispatch in real-time for the entirety of the hour.

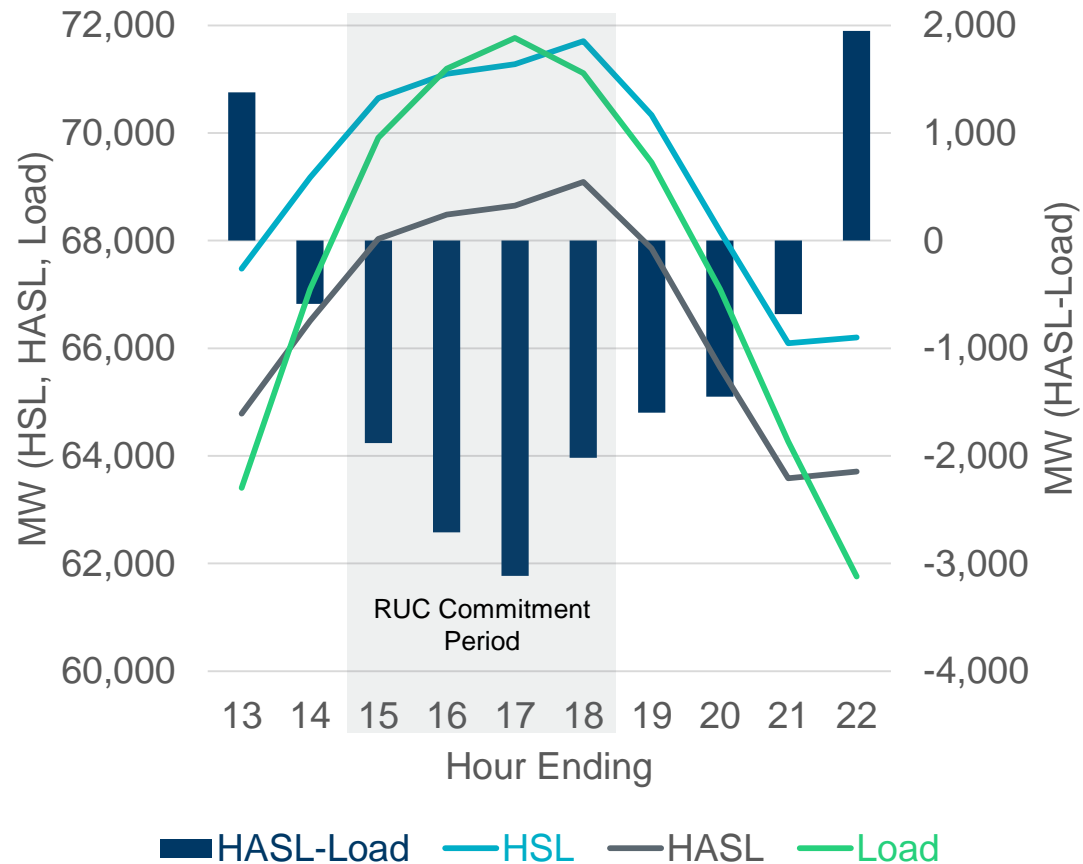
| RUC Reason | RUC Bought Back | July 26 | August 1 | August 2 |
|-----------------|-----------------|---------|----------|----------|
| System Capacity | N | 0 | 8 | 2 |
| | Y | 4 | 4 | 6 |
| Congestion | N | 0 | 0 | 0 |
| | Y | 0 | 0 | 8* |

*This commitment was associated with a transmission constraint but also occurred during a time when additional system capacity was needed.

July 26th RUC for Capacity

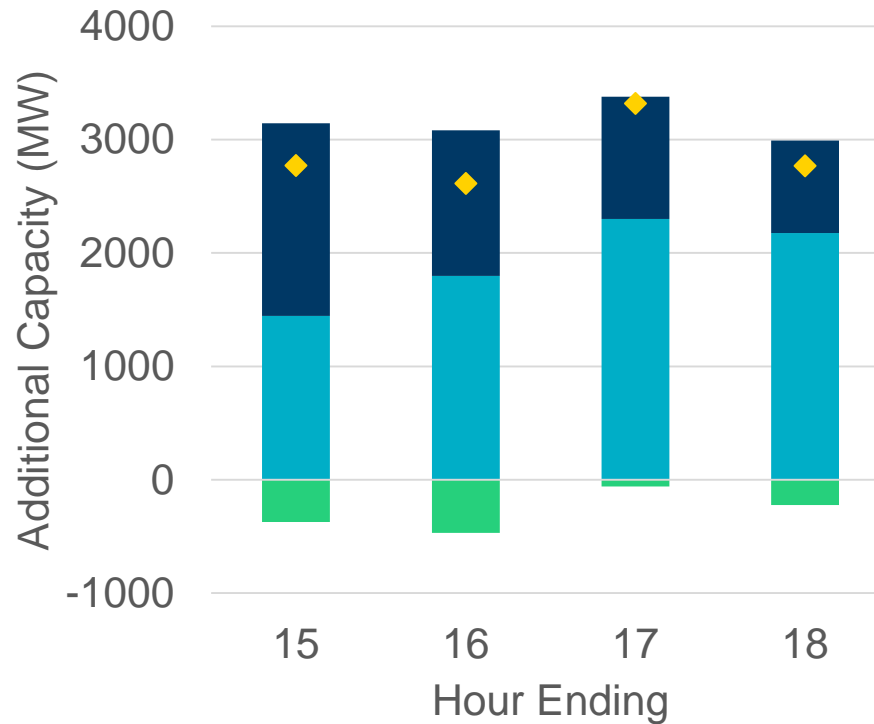
- ERCOT was projecting a reserve capacity shortage and issued an OCN at 9:06 AM
- 10 AM HRUC showed 3,114 MW short for HE 17
 - 1 Resource committed (36 MW)
 - 42 Resources deferred
- 1,669 MW of Resources with start-up times < 1 hour were showed at OFF for HE 17
 - Excludes Combined-Cycle Resources

Forecasted Load vs. Projected Online Capacity during July 26, 2018 HRUC at 10 AM



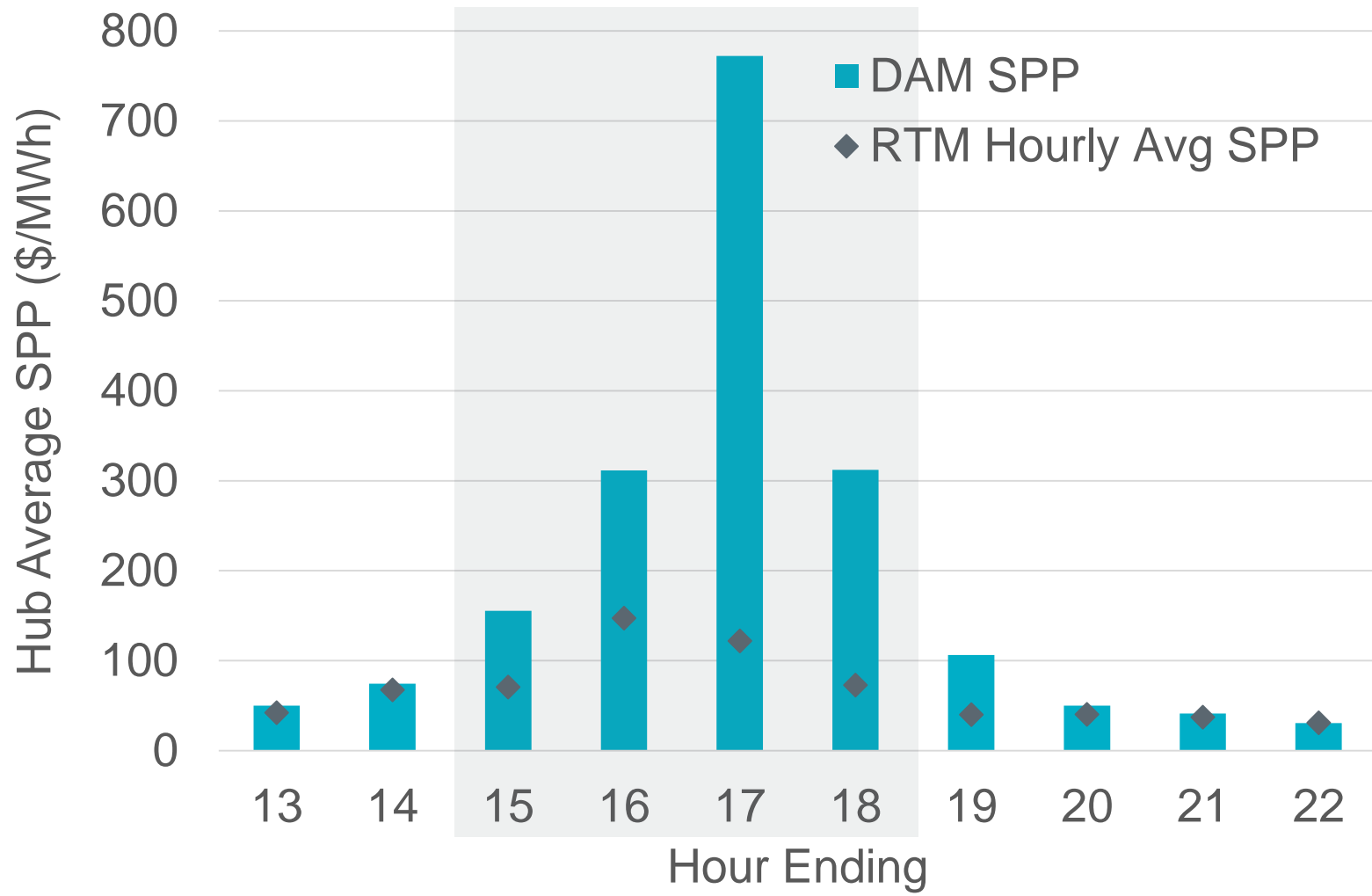
July 26th RT Reserve Capacity vs. 10 AM RUC

Forecast Error and Additional Capacity in SCED from July 26, 2018
COP at 10 AM



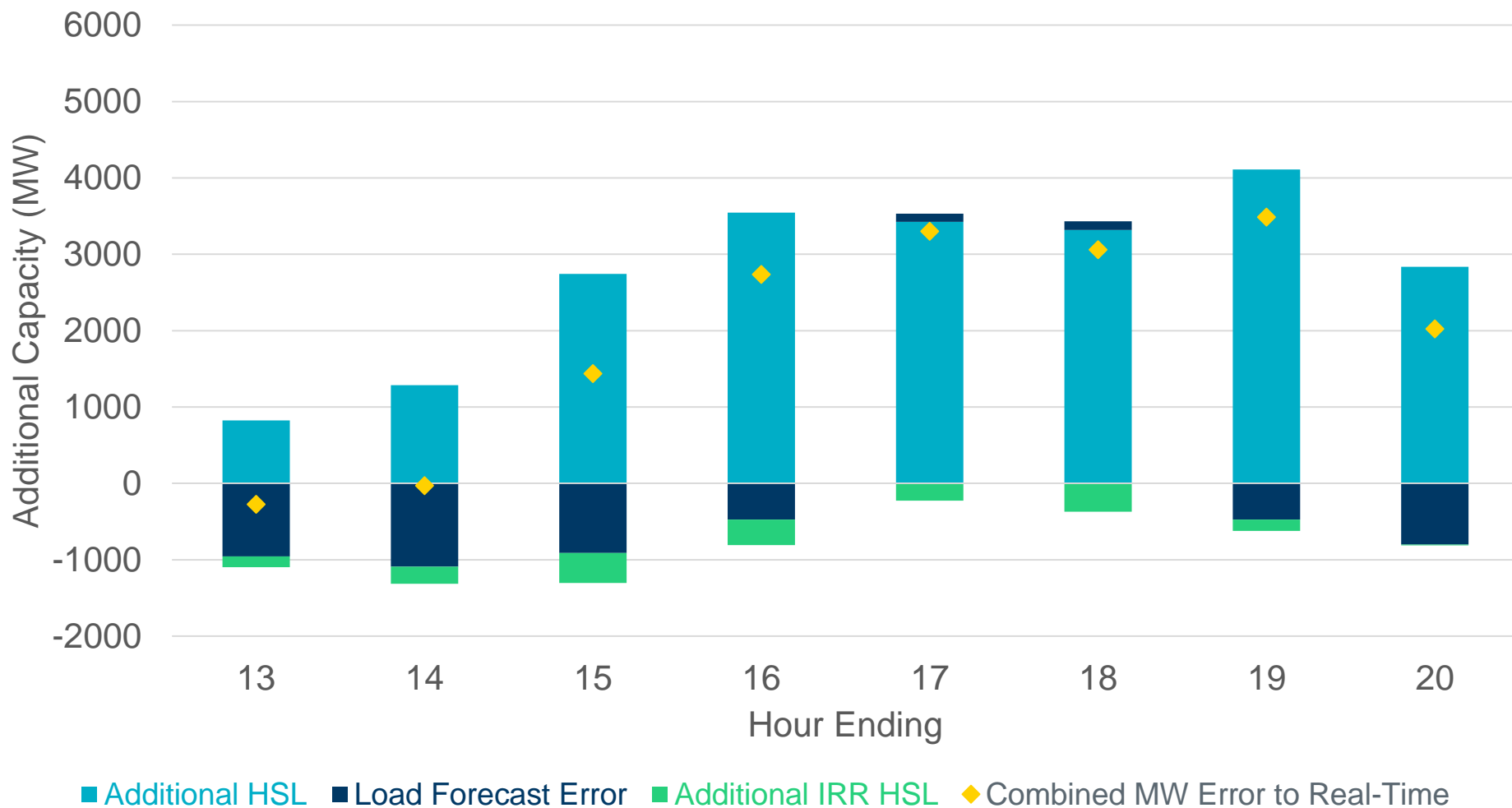
■ Additional HSL ■ Load Forecast Error ■ Additional IRR HSL ◆ Combined MW Error to Real-Time

July 26th DAM Prices

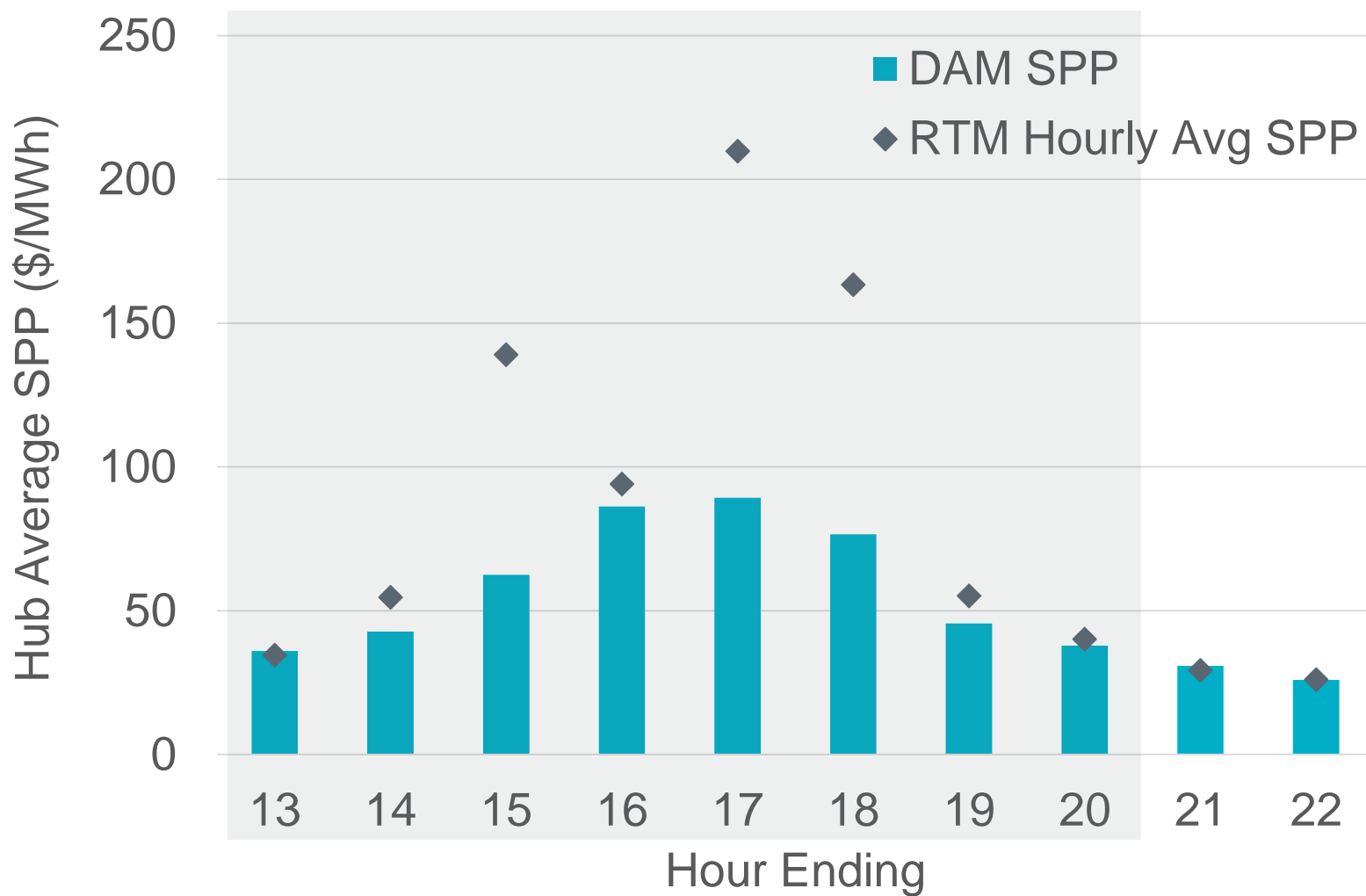


August 1st RT Reserve Capacity vs. 7 AM RUC

Forecast Error and Additional Capacity in SCED from August 1, 2018
COP at 7 AM

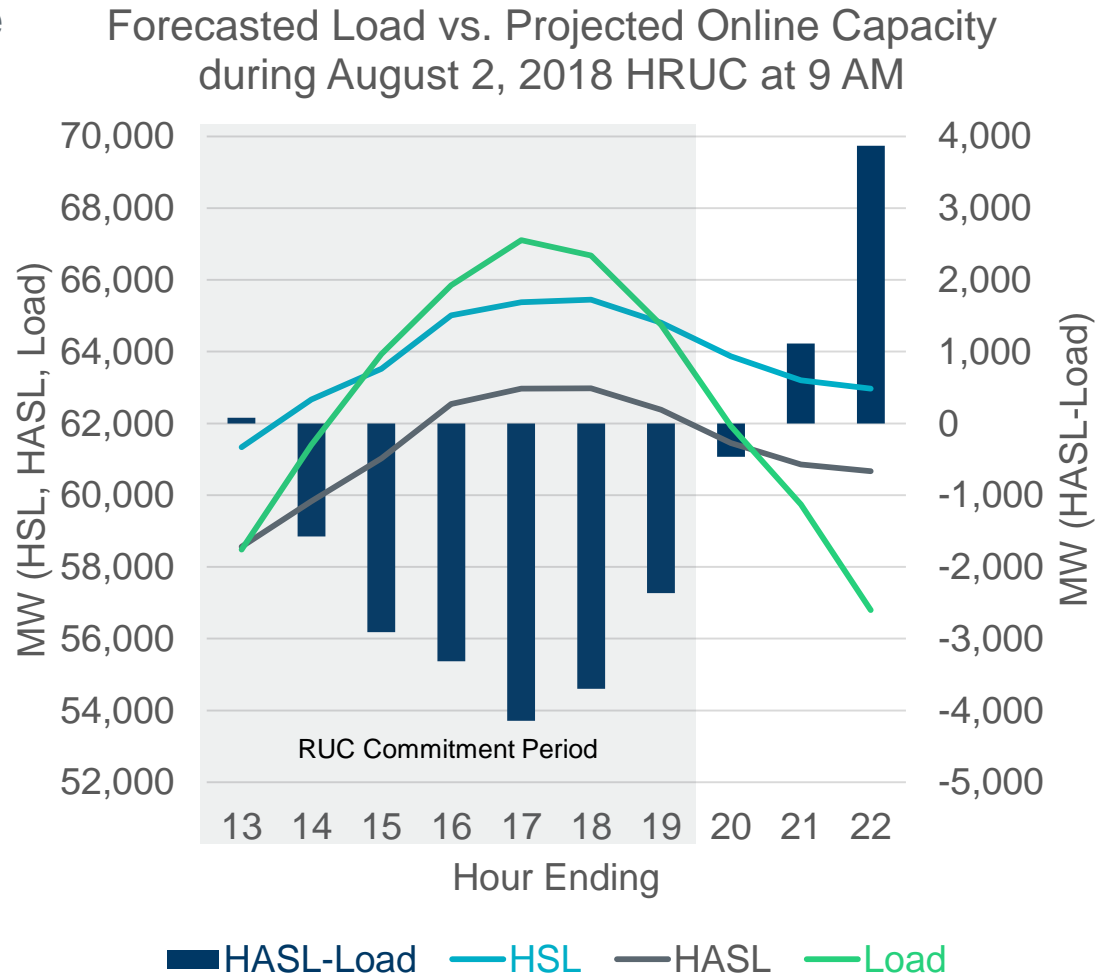


August 1st DAM Prices



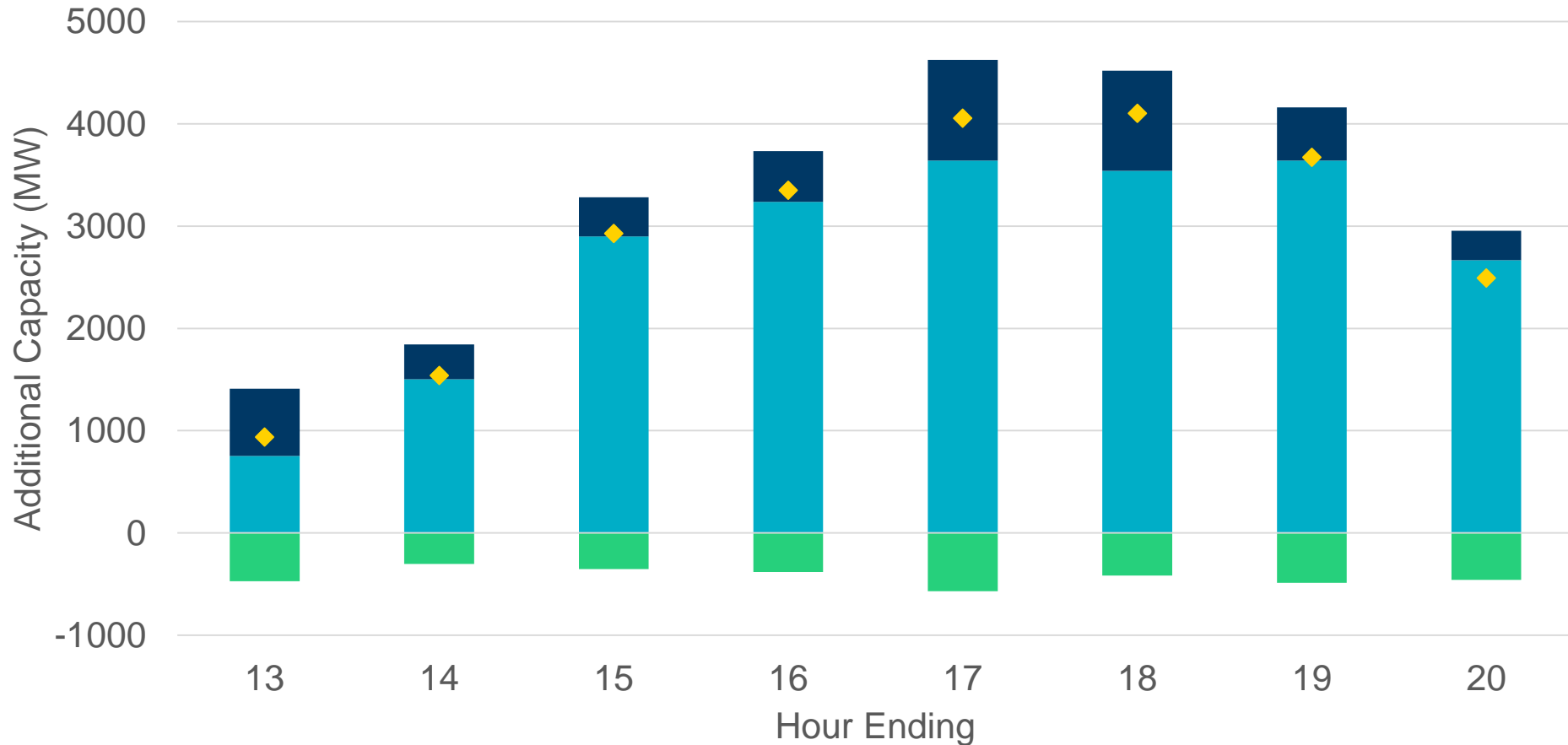
August 2nd 9 AM RUC for Capacity

- ERCOT was projecting a reserve capacity shortage and issued an OCN on 8/1/18 9:59 PM.
- 9 AM HRUC showed 4,142 MW short for HE 17
 - 3 Resources committed (972 MW)
 - 28 Resources deferred
- 1,842 MW of Resources with start-up times < 1 hour were showed at OFF for HE 17
 - Excludes Combined-Cycle Resources



August 2nd RT Reserve Capacity vs. 9 AM RUC

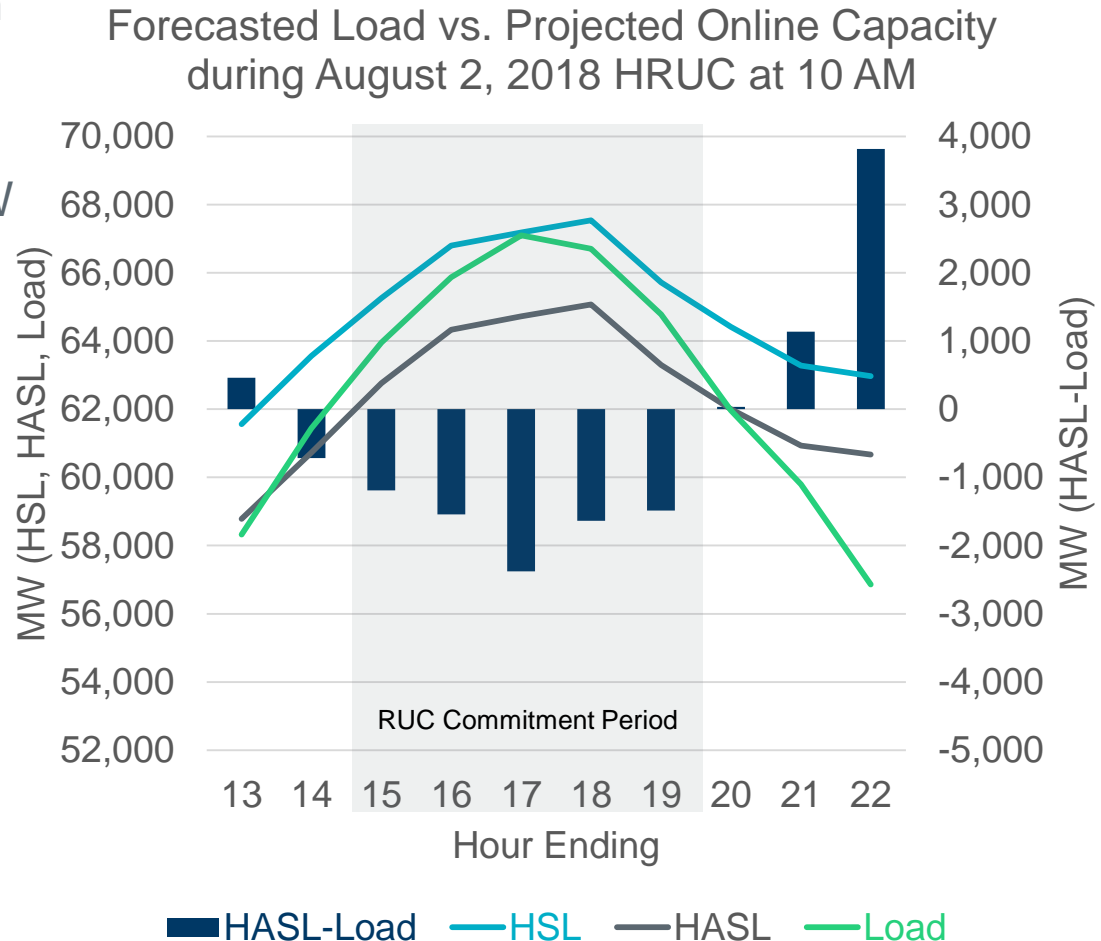
Forecast Error and Additional Capacity in SCED from August 2, 2018
COP at 9 AM



■ Additional HSL ■ Load Forecast Error ■ Additional IRR HSL ◆ Combined MW Error to Real-Time

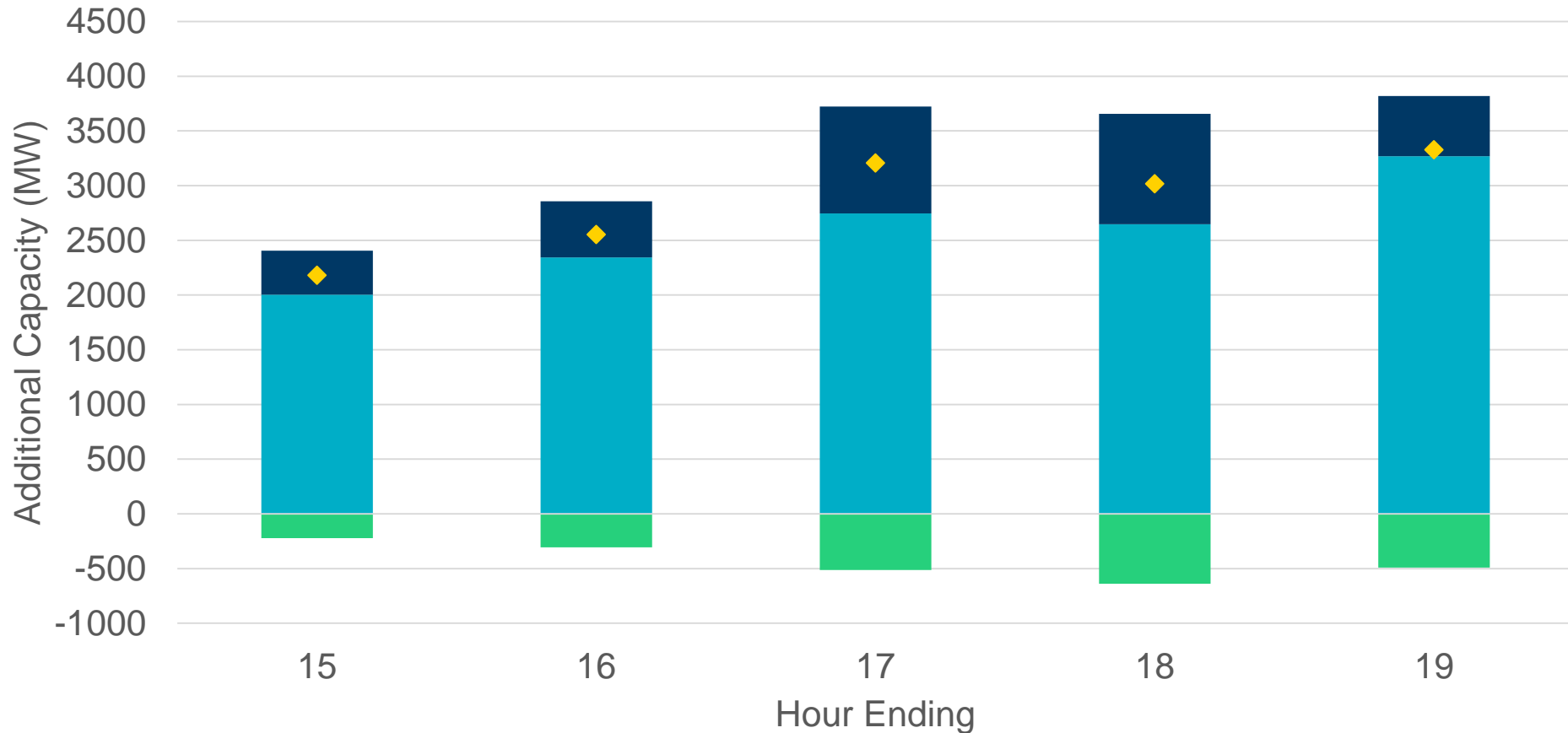
August 2nd 10 AM RUC for Capacity

- OCN from 8/1/18 9:59 PM still in effect
- 10 AM HRUC showed 2,377 MW short for HE 17
 - 2 Resources committed (739 MW)
 - 24 Resources deferred
- 1,898 MW of Resources with start-up times < 1 hour were showed at OFF for HE 17
 - Excludes Combined-Cycle Resources
- Total of 1,209 MW committed at HE 17 in 9 AM and 10 AM RUCs



August 2nd RT Reserve Capacity vs. 10 AM RUC

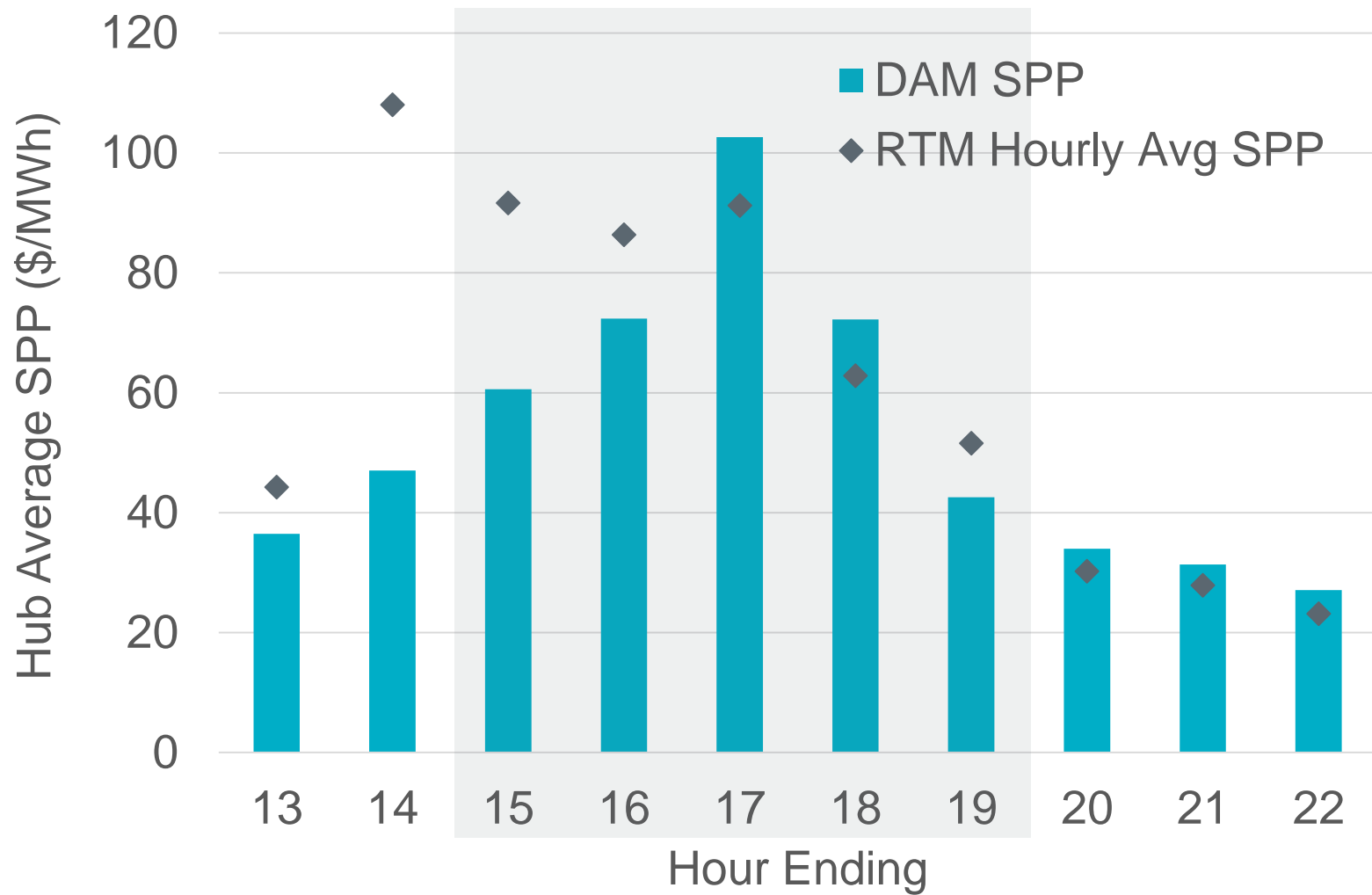
Forecast Error and Additional Capacity in SCED from August 2, 2018
COP at 10 AM



■ Additional HSL ■ Load Forecast Error ■ Additional IRR HSL ◆ Combined MW Error to Real-Time

HSL from 9 AM RUC not in RUC HSL Category

August 2nd DAM Prices



NPRR 864 HRUC Re-Runs

- HRUC Re-Runs were conducted mimicking the implementation of NPRR 864
- Resources with cold start time less than or equal to 1 hour had Start Up and Min Gen costs reduced to 20% of verifiable or generic

NPRR 864 HRUC Re-Run Comparisons

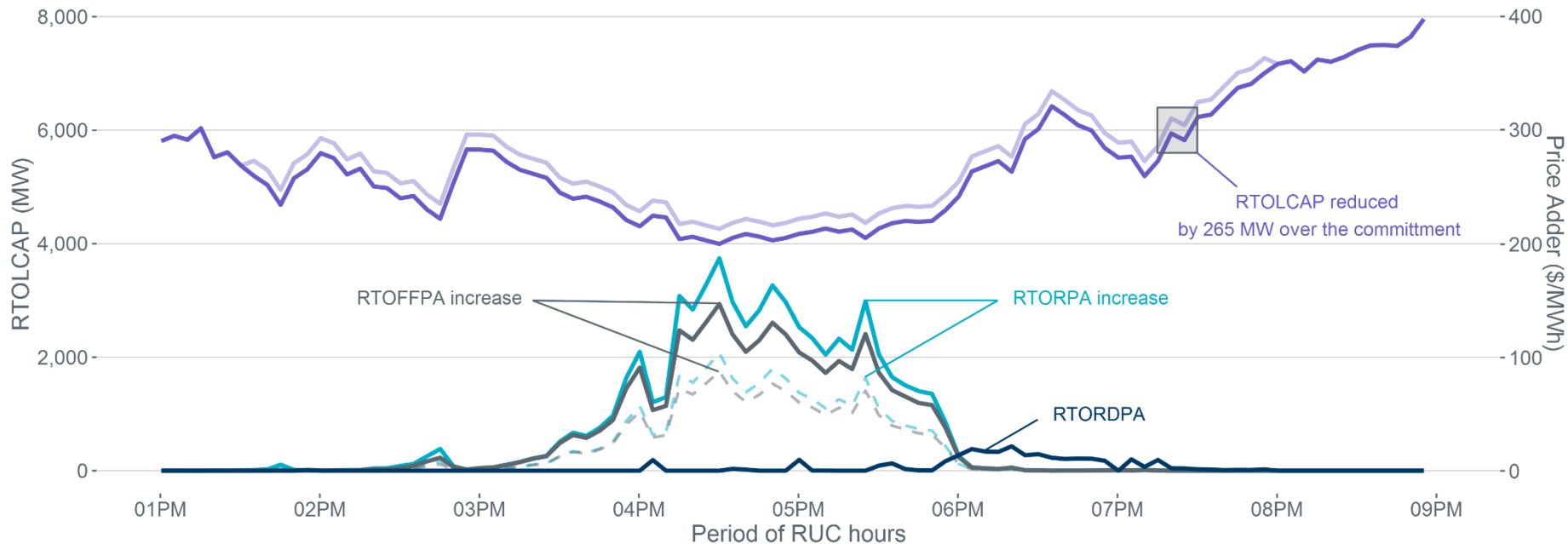
| HRUC Case | RUC Count (Original→Rerun) | RUC HSL MWh (Original→Rerun) | Committed Resource(s) |
|-----------|----------------------------|------------------------------|---|
| 7/26 10AM | 43→39 | 8,561→8,572 | Still recommended |
| 8/1 7AM | 42→44 | 17,277→17,111 | Still recommended |
| 8/2 9AM | 31→37 | 15,569→15,335 | Still recommended |
| 8/2 10AM | 26→36 | 5,039→4,661 | No longer recommended. Decisions on alternative recommendations could have been deferred. |

Impact of Removing RUC HSL from RTOLCAP

- OBDRR002, ORDC OBD Revisions for PUCT Project 47199, was implemented on 5/31 and revised the calculation of online and offline reserve to exclude ONRUC capacity
- 8/1 and 8/2 had Resources that were ONRUC in SCED
- ORDC online and offline (RTORPA and RTOFFPA) price adders were recalculated to illustrate the impact of removing the ONRUC capacity

8/1 – RUC Capacity Removed from RTOLCAP

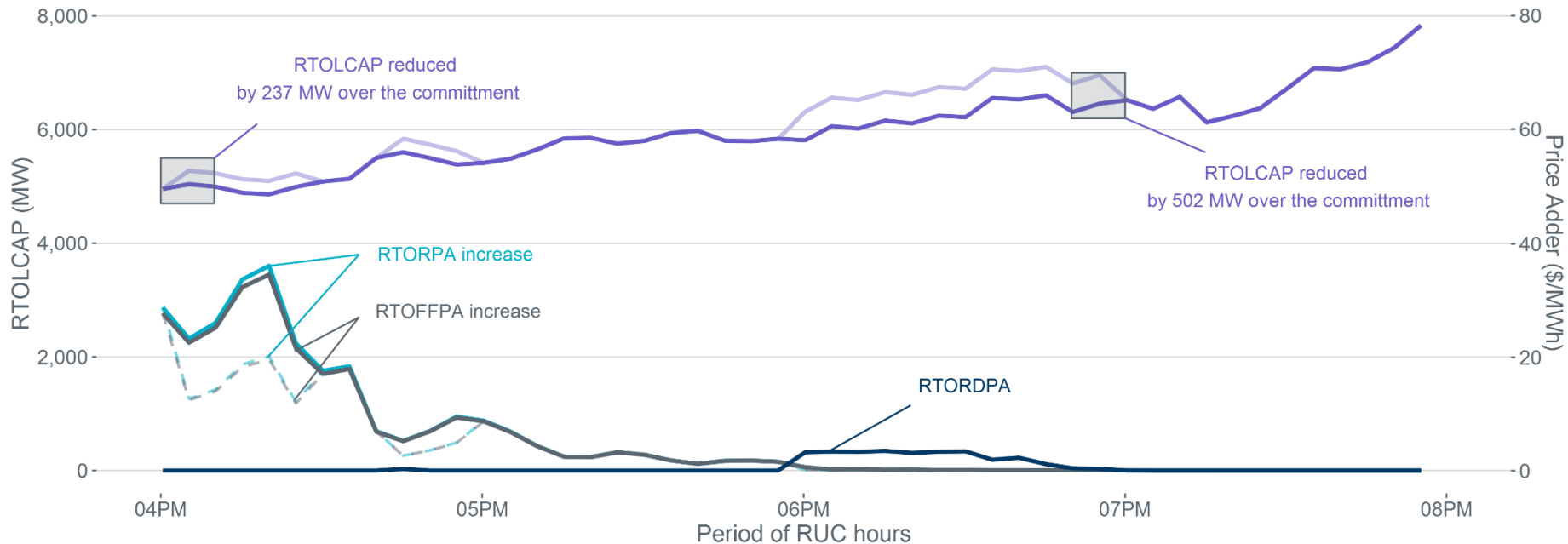
Impact of Removing RUC capacity from RTOLCAP - Price Adders



| Adder | Average | Maximum | Time of Maximum |
|------------------|---------|---------|-----------------|
| RTORPA increase | \$18.98 | \$83.43 | 16:30 |
| RTOFFPA increase | \$14.67 | \$59.45 | 16:30 |
| RTORDPA | \$3.16 | \$21.48 | 18:20 |

8/2 – RUC Capacity Removed from RTOLCAP

Impact of Removing RUC capacity from RTOLCAP - Price Adders



| Adder | Average | Maximum | Time of Maximum |
|------------------|---------|---------|-----------------|
| RTORPA increase | \$3.77 | \$15.94 | 16:20 |
| RTOFFPA increase | \$3.59 | \$14.92 | 16:20 |
| RTORDPA | \$5.48 | \$17.35 | 18:15 |

RUC Commitment with DAM TPO Award

- One of the RUC-committed Resources had a DAM three-part offer award but was showing OFF in its COP
- It did not opt out of the RUC
- The ORDC and 626 price adders took into account the ONRUC status