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ERCOT update on RUC

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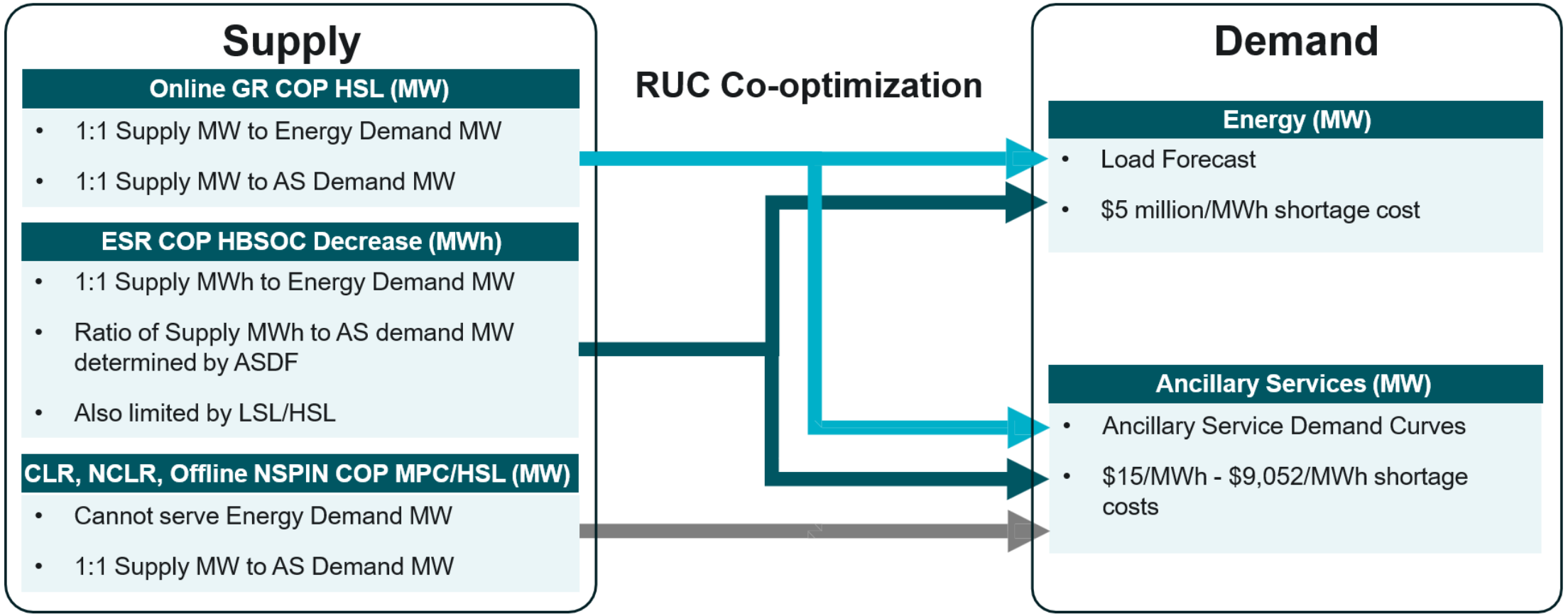
Purpose:
Review and discuss factors contributing to recent RUC activity

Key Takeaway(s)

- Recent RUC recommendations are being primarily driven by insufficient online capacity and energy to serve forecasted demand
- Inputs- including COP Hour-Beginning-State-of-Charge (HBSOC) submissions- can contribute to commitment recommendations when a shortage in supply is forecast
- ~3% of approved RUC activity was due to manual commitments outside of the recommendation

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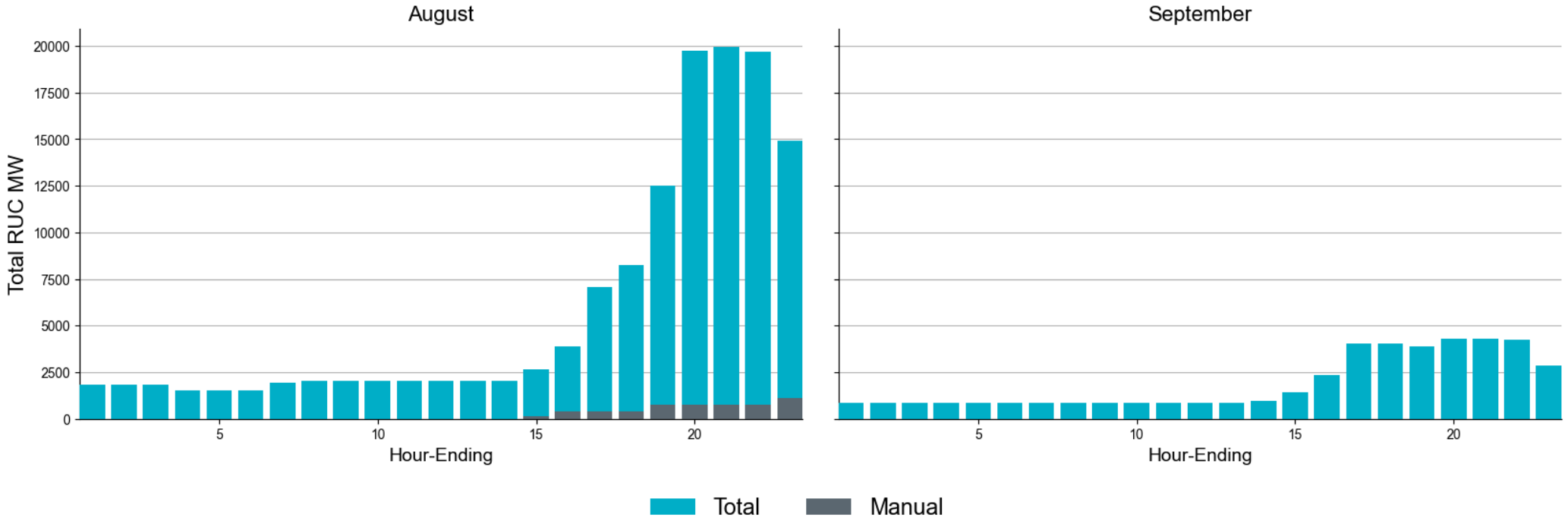
RUC co-optimization relies on QSE inputs and allocates supply to demand to minimize shortage costs



- ASDFs represent the likelihood and magnitude of SOC discharge that would be expected for an ESR AS Award
- ASDFs determine how much COP HBSOC Decrease (ESR energy) is required to serve each MW of AS Demand
- **ASDFs do not apply to Energy Awards;** HBSOC Decrease (MWh) to Energy Demand (MW) ratio is always 1:1

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97% of approved RUC were recommended by RUC clearing engine

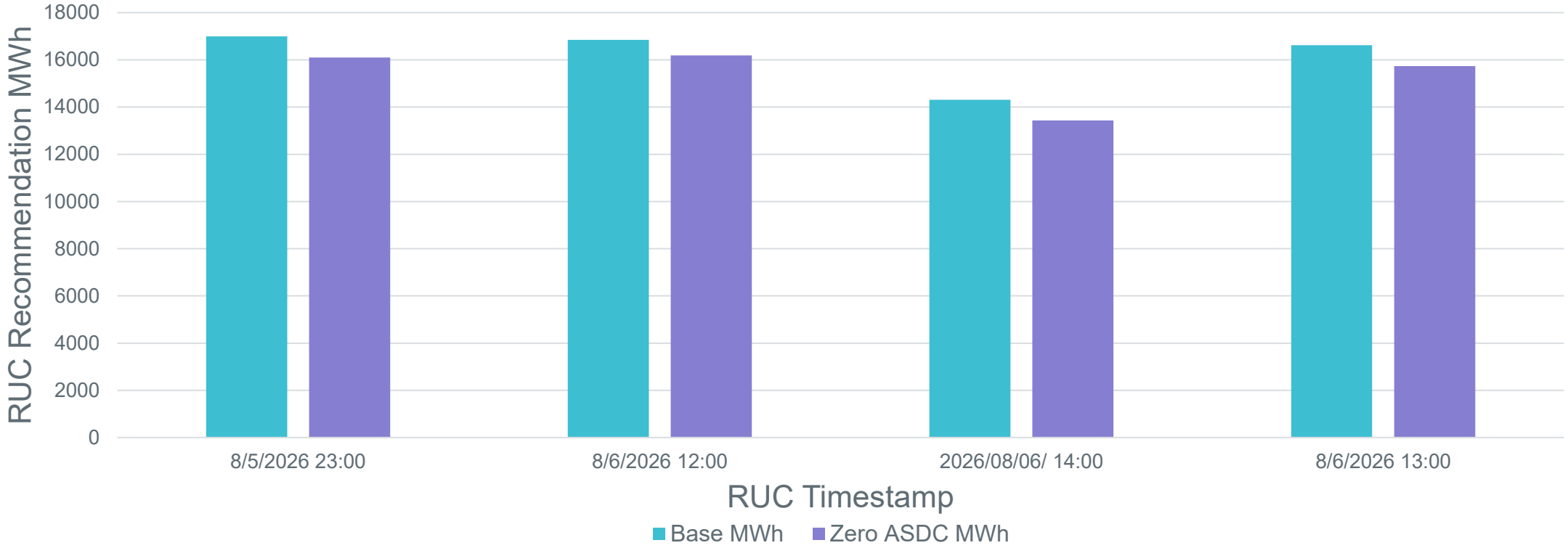


- Between August and September, commitments made outside of RUC engine recommendations with AS shortage as the commit reason occurred on only 9 days, all in August.
- There were 181,997 MWh of committed energy, 5,449 MWh of which were manual commitments - accounting for 3% of all commitments.
- Most operator rejections of RUC-recommended units were due to unit start-up time considerations.

Key Takeaway: Commitments made outside of RUC engine recommendations account for a small percentage of overall commitments. The majority of rejected units by system operators are due to unit start-up time considerations.

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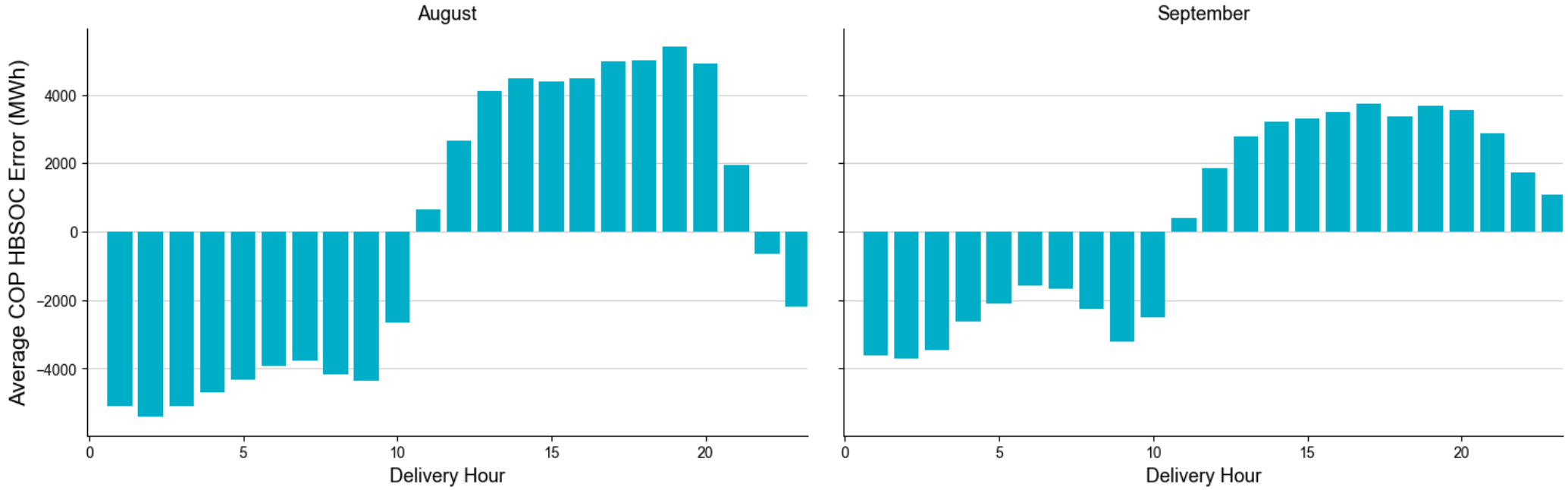
Forecasted capacity shortfalls to meet demand and transmission congestion are driving RUC



- To isolate the effect of ASDC on RUC recommendations, ASDC price was set to $0 for all AS types and RUC engine was rerun, with other inputs unchanged, and recommended MWh against the base case.
    - By setting ASDC price to $0, any AS shortages essentially becomes “free”, therefore allowing RUC engine to prioritize scheduling available supply to serve the load forecast.
    - August 6th commitments are shown as an example.
- There was no significant difference in total recommended MWh between the two cases, showing that the ASDC has minimal direct impact on RUC recommendations and that **drivers of RUC recommendations are insufficient online capacity and energy to serve forecasted demand and manage transmission congestion**

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COP Submissions can impact RUC Recommendations



- Average COP HBSOC error for August and September
  - Error = Telemetry SOC – COP HBSOC
- May 28th snapshot showed 43% of submissions with flat profiles while a September 15th snapshot showed 12% of submission with flat profiles.
- While submitted HBSOC profiles have been improved, COP HBSOC still show deviation from telemetry SOC.

Key Takeaway: While flat profile COP HBSOC submission has been improved significantly due to outreach and education efforts, the submitted HBSOC profile still show deviation from actual SOC.

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Current Practice and Next Steps

- Commitments labeled “Capacity AS” are indicative of the RUC optimization seeing the need to forgo procurement of Ancillary Services and instead use that capacity to serve demand.
  - In summer, this typically corresponded with periods of high net load, and on several of these days, RUC saw the AS shortfall even after the commitment of additional long lead-time units.
  - Some of these RUCs could have been avoided with more accurate RUC inputs (including more accurate COP HBSOC submissions), but not all.
  - Another mechanism that could influence the volume of RUC is stronger self-commitment, through improvements to the ASDCs, so that days like those examined on slide 4 see market action ahead of RUC.
- Next Steps
  - Holistic review of Ancillary Service Demand Curves planned for 2027, including how to better align them with AS requirement quantities and marginal reliability value.
  - Continue to monitor HBSOC COP submission accuracy and follow up as needed

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