2025 Day-Ahead Market Pricing Impacts: Multi-Step ORDCs with Extended Requirements

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Introduction

- Analyzed the pricing and commitment impacts in the Day-Ahead Market (DAM) for the following:
  - Unnested 10-Min Synchronized Reserve (SR) from 30-Min Reserve with the 30-Min Reserve having a nested 30-Min Online Reserve component.
  - 10-Min Online Reserve includes 10-Min SR and 10-Min RUR. 30-Min Online Reserve includes 30-Min RUR and an additional Energy Gap Reserve. 30-Min Reserve reflects 30-Min Online Reserve as well as DASR procurement.
  - The proposed reserve products are represented using updated hourly Operating Reserve Demand Curves (ORDCs) with multi-step segments.
- Simulations were performed for the full year 2025 (six days were removed due to the simulations not converging and other data issues).
- Two scenarios were simulated:
  - **Scenario 1**: Base Case with no changes
  - **Scenario 2**: Updated ORDCs for all products with Primary Reserve not optimized
- PROBE Day-Ahead is used to run the simulations for the DA market.

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Scope and Interpretation of the Simulation Results

- The simulation results provide insights into changes in LMP and ancillary service MCPs from the proposed reserve market changes being discussed in the RCSTF.
- The directional change in DA market uplift is also provided. Because the analysis simulates the DA market only, it does not estimate impacts to RT market uplift.
- The DA market uplift calculated by PROBE DA is a simplification of actual PJM settlement rules.
- The simulation results do not incorporate changes in reserve offers. The reserve market clearing prices are based on lost opportunity cost.

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2025 Summary Statistics

- The following table shows a summary of the yearly* simulation results**.

Category	Metric	Product/Type	Base Case	Multi-step ORDC	Multi-step ORDC – Base Case
Energy	Gen-Weighted Avg. LMP ($/MWh)	N/A	46.27	46.67	0.40
Reserves	Avg. MCP ($/MWh)	10-Min Online	4.43	6.36	1.93
		Primary	3.71	-	-
		30-Min Online	-	3.2	-
		30-Min	0	1.02	1.02

- Uplift*** reduced by 1.5% in the Multi-step ORDC Case.

*The following days are excluded from the results due to non-convergence: 04/06, 04/17, 06/10, 08/11, 08/27, 11/23
**The results are rounded to two decimal places.
***Uplift is calculated as the difference between a unit's costs and revenues over each day summed for all days and units.

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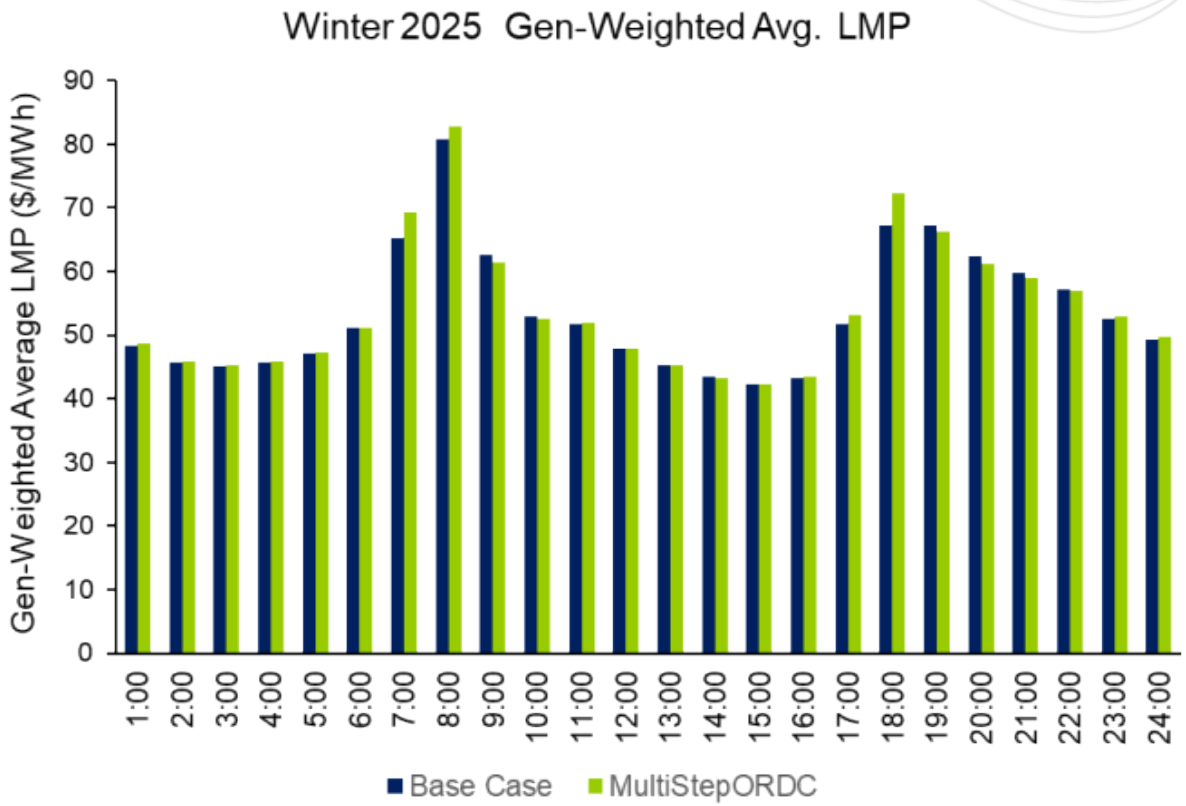
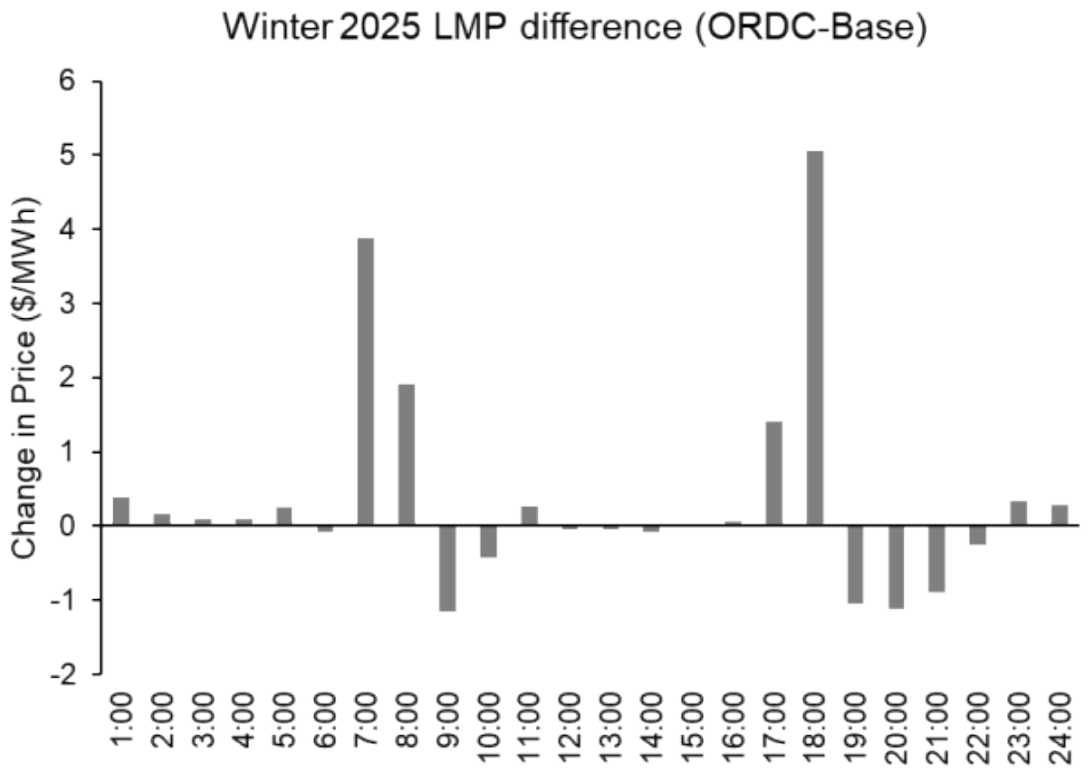
Day-Ahead Simulation Results – Seasonal LMPs

- Winter Generation-Weighted Average LMPs





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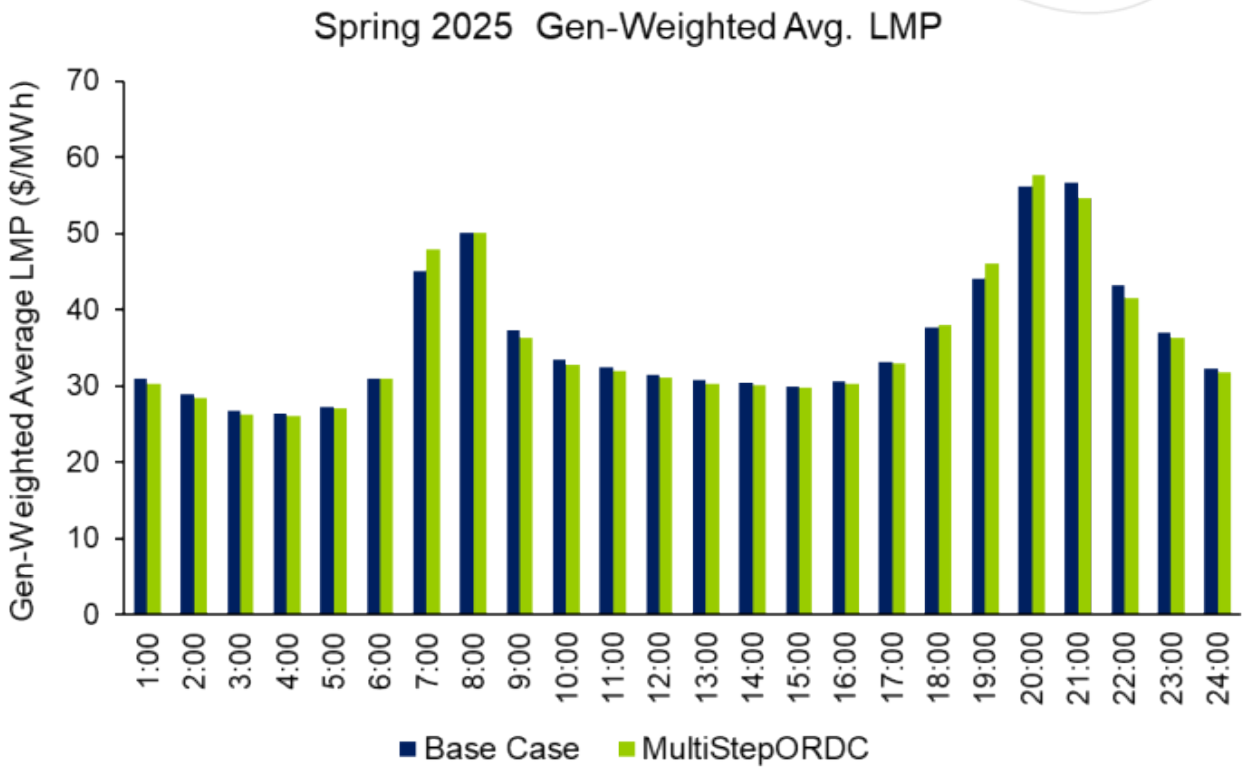
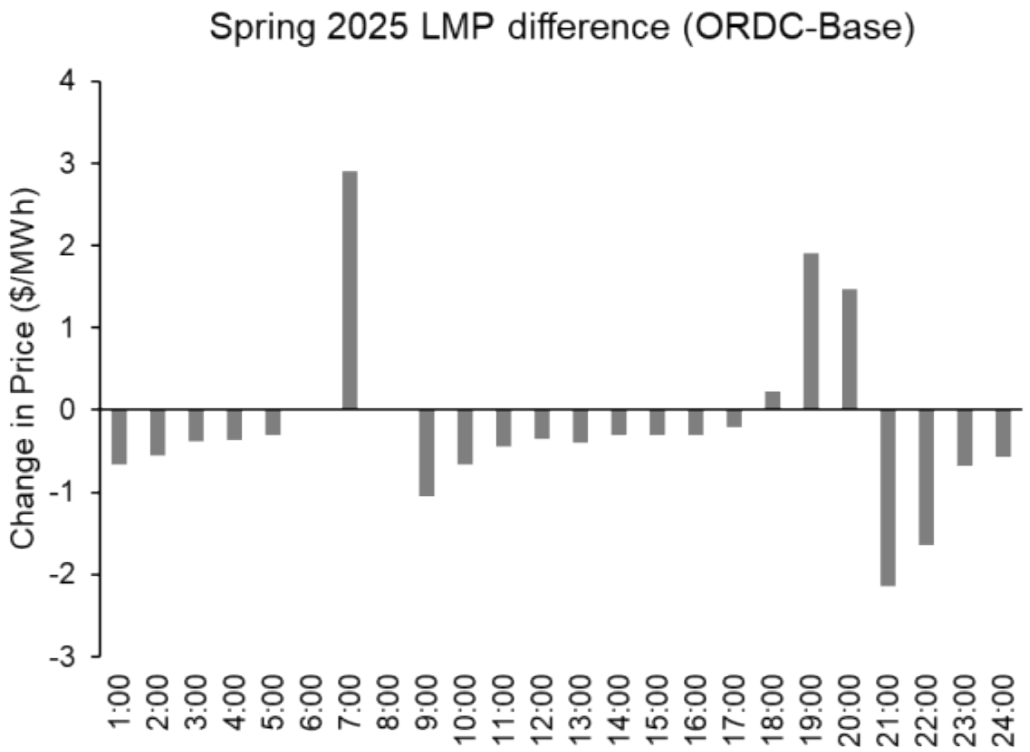
Day-Ahead Simulation Results – Seasonal LMPs

- Spring Generation-Weighted Average LMPs





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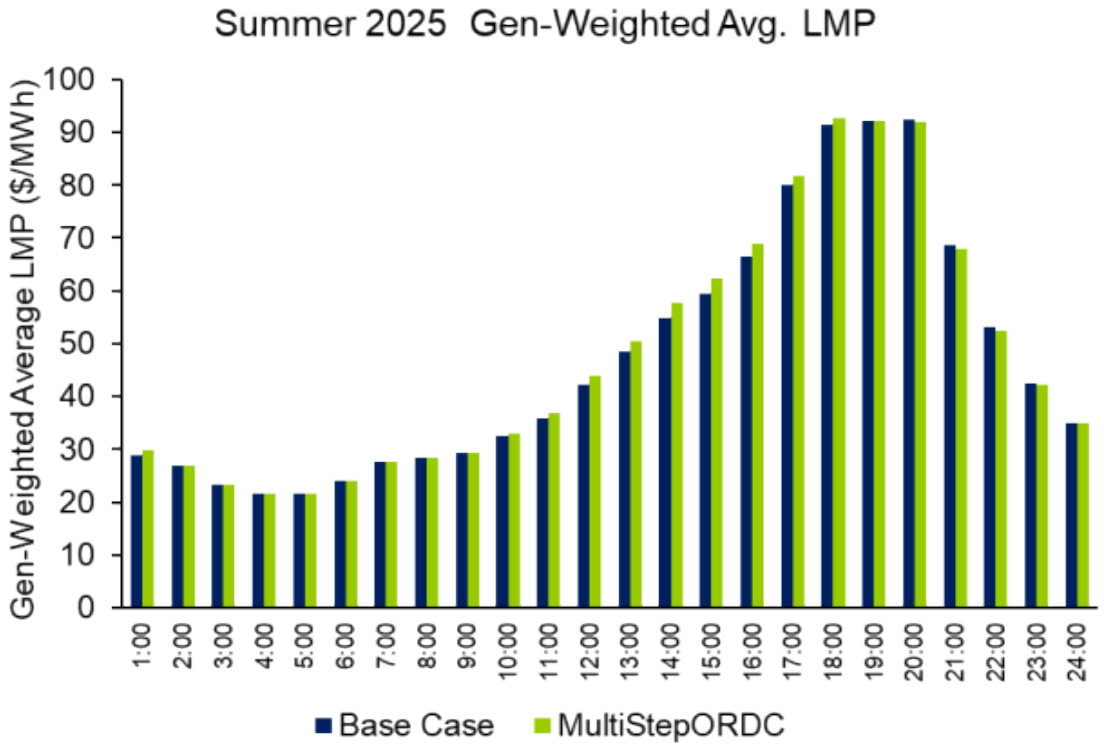
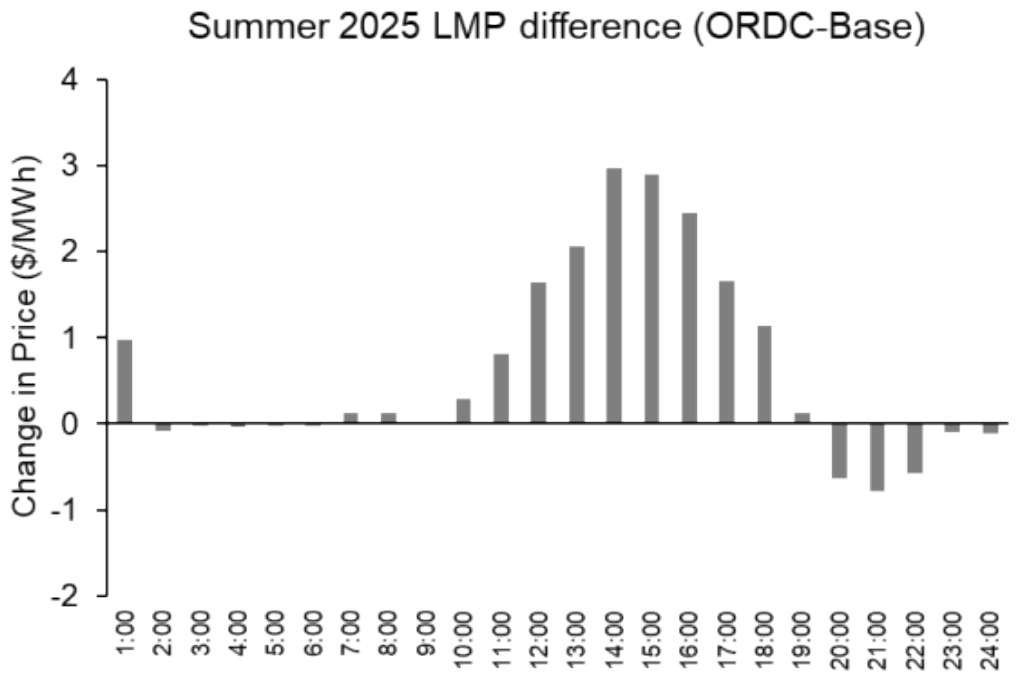
Day-Ahead Simulation Results – Seasonal LMPs

- Summer Generation-Weighted Average LMPs





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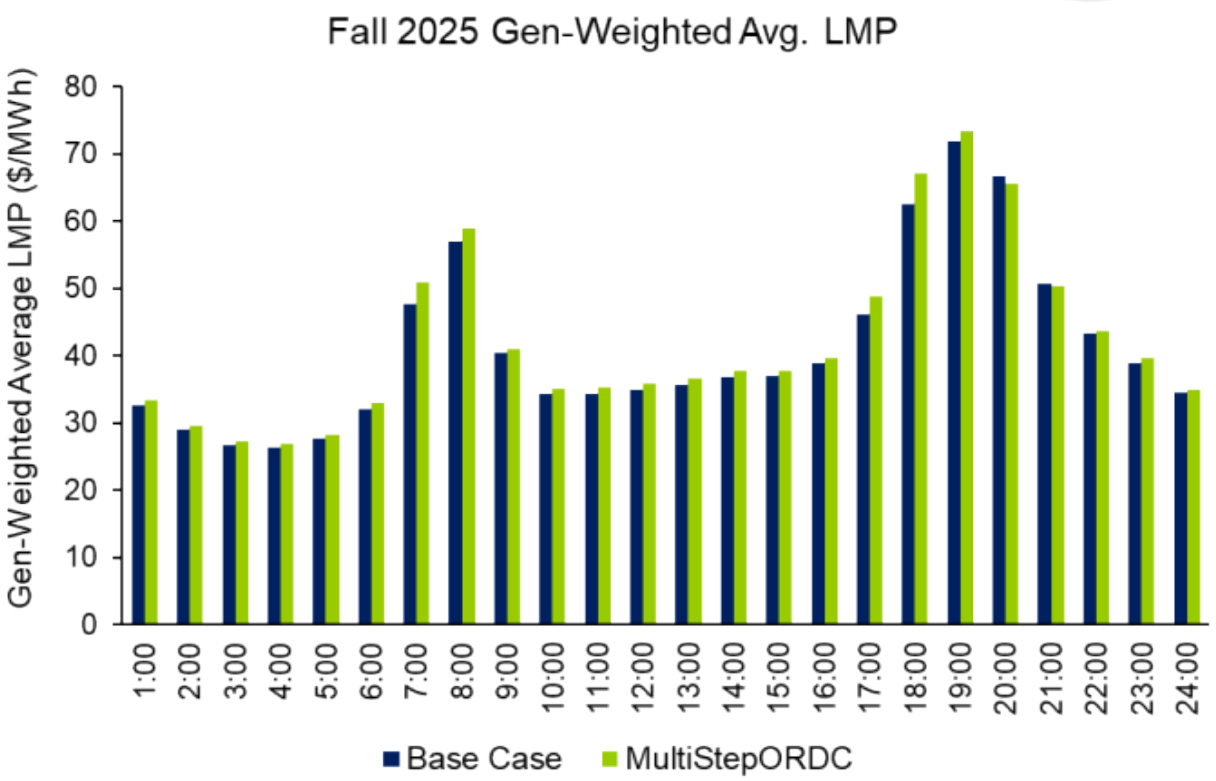
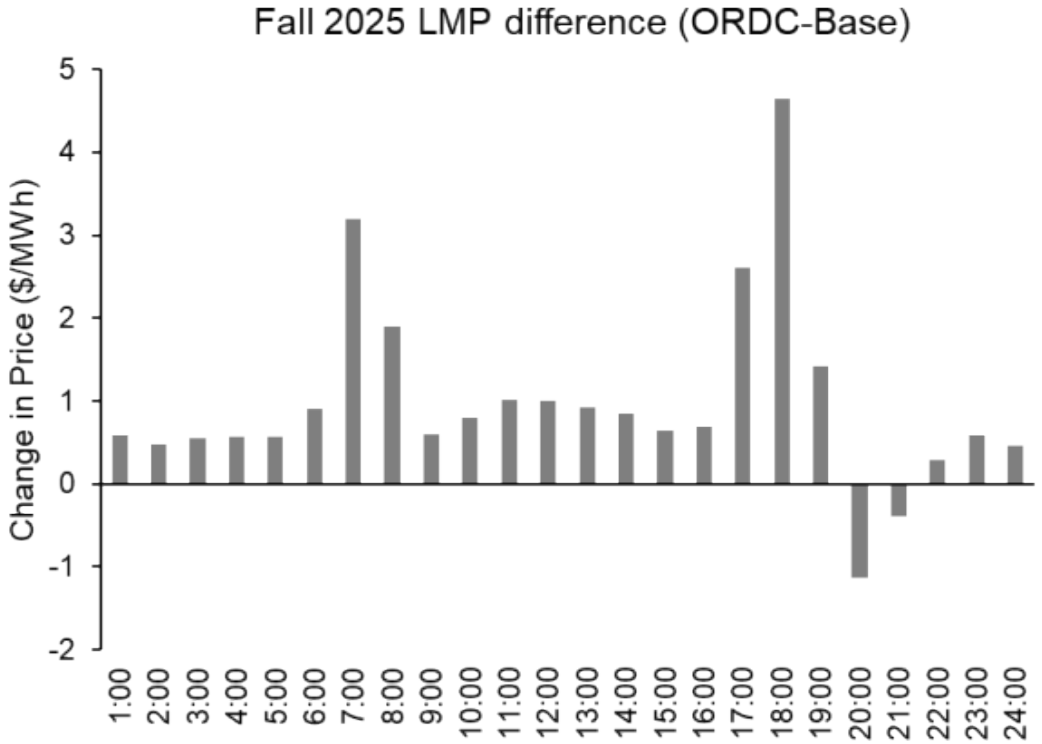
Day-Ahead Simulation Results – Seasonal LMPs

- Fall Generation-Weighted Average LMPs





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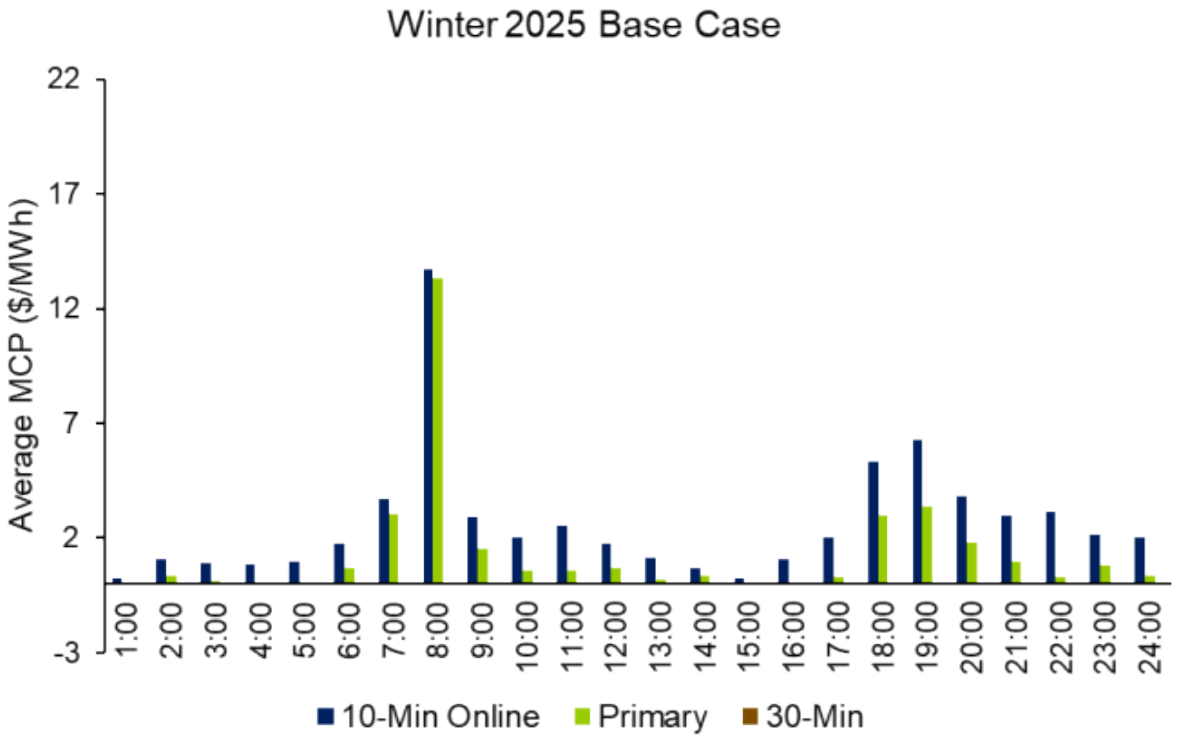
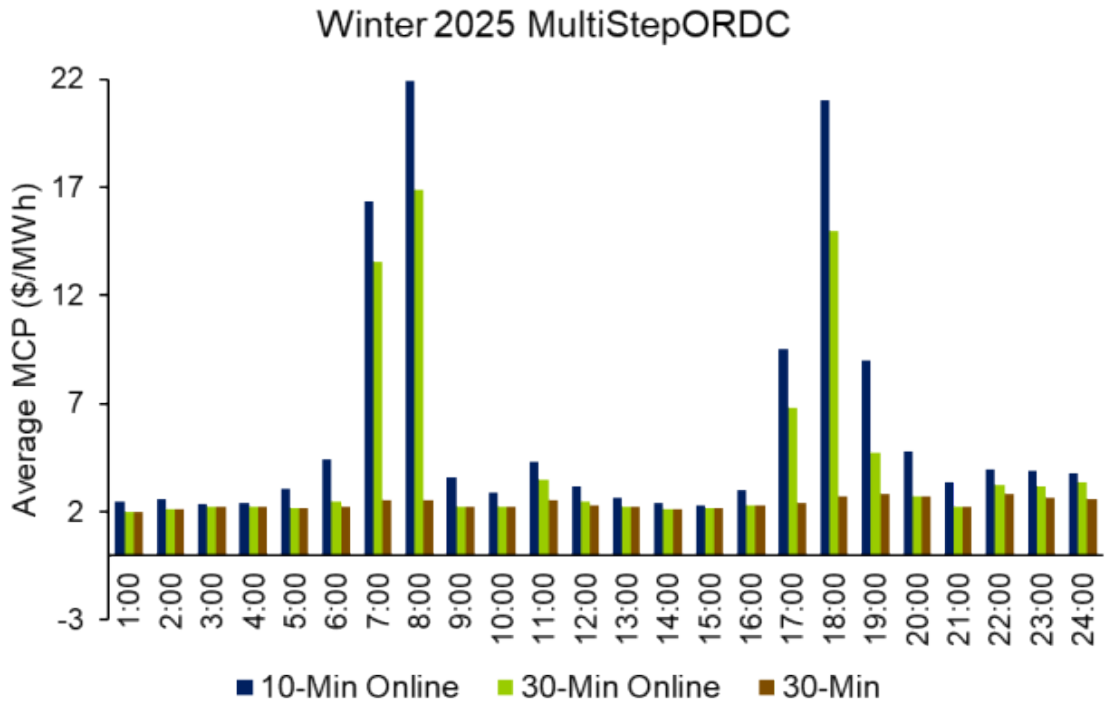
Day-Ahead Simulation Results – AS MCPs

- Winter Average MCPs





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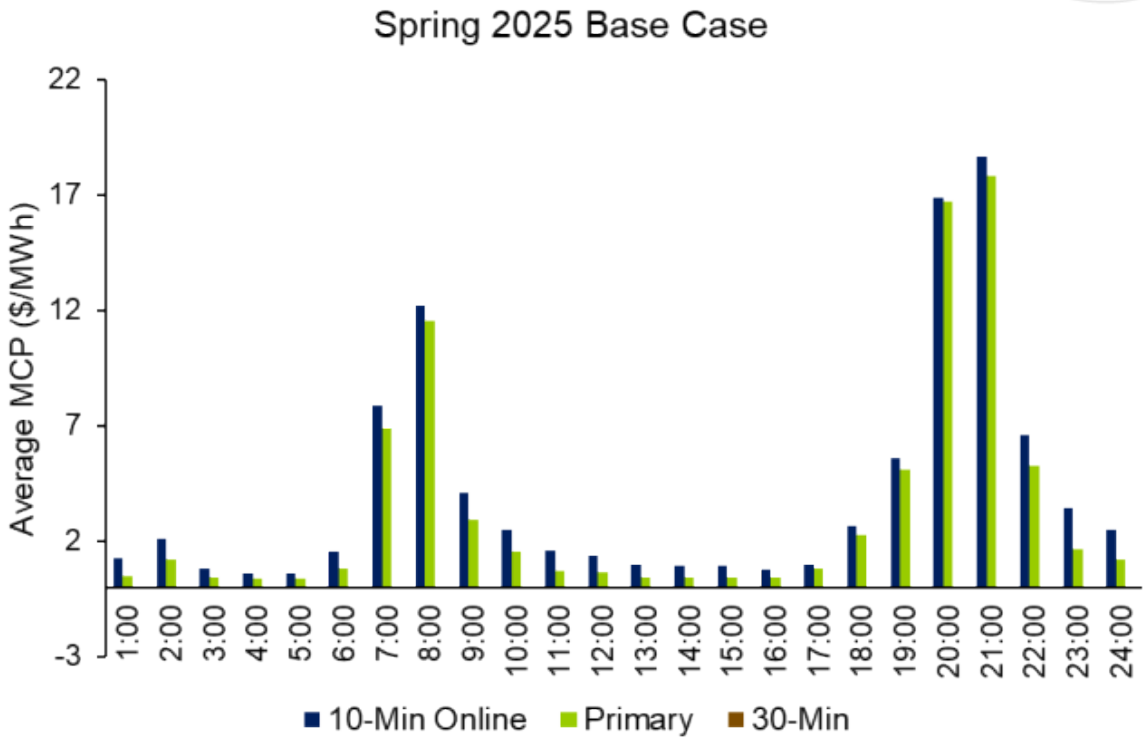
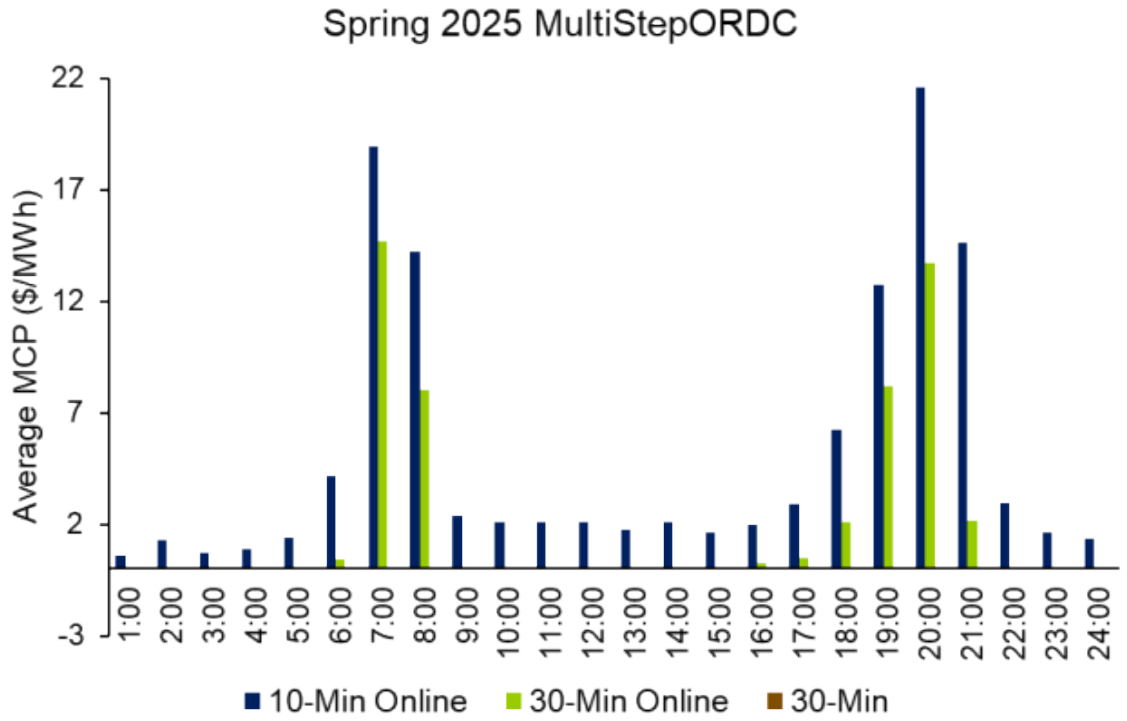
Day-Ahead Simulation Results – AS MCPs

- Spring Average MCPs





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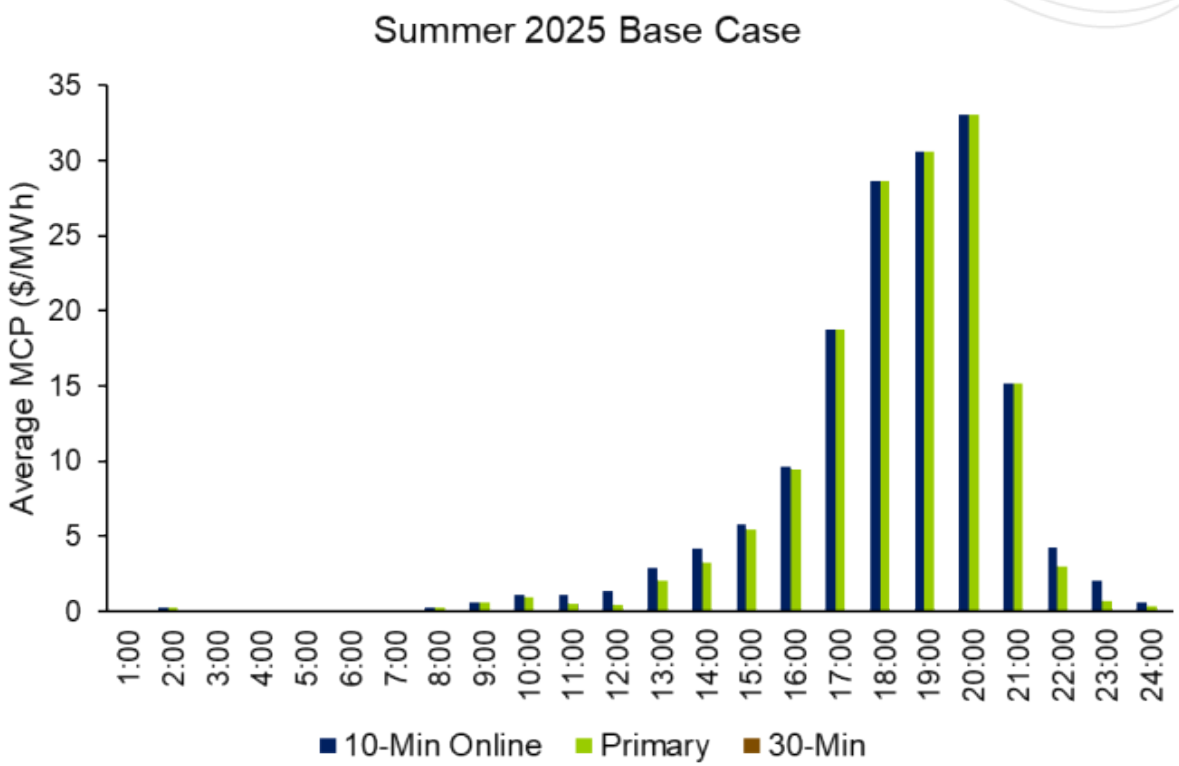
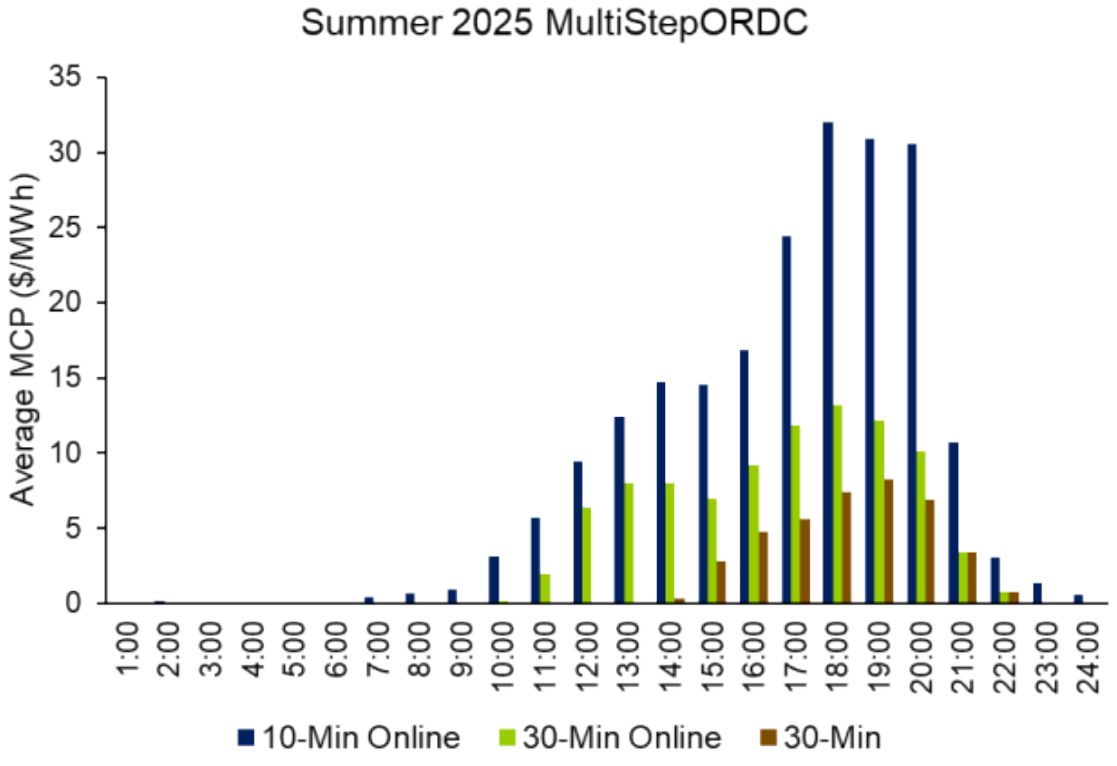
Day-Ahead Simulation Results – AS MCPs

- Summer Average MCPs





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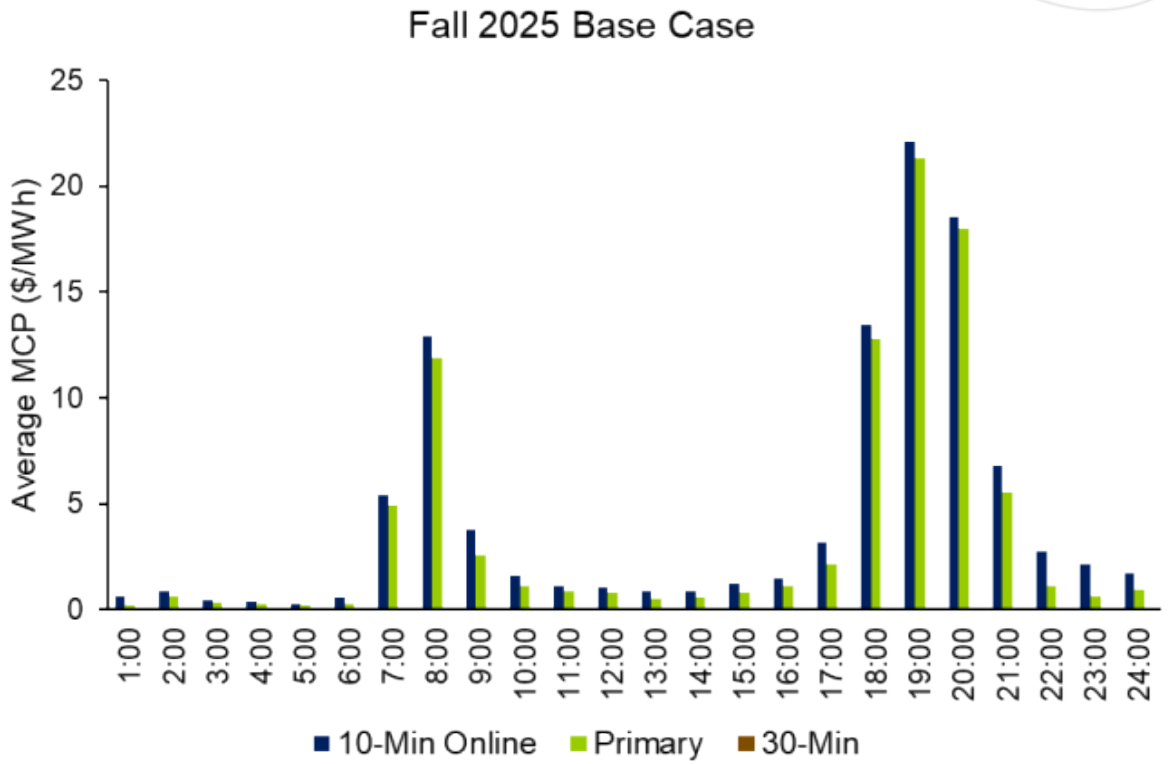
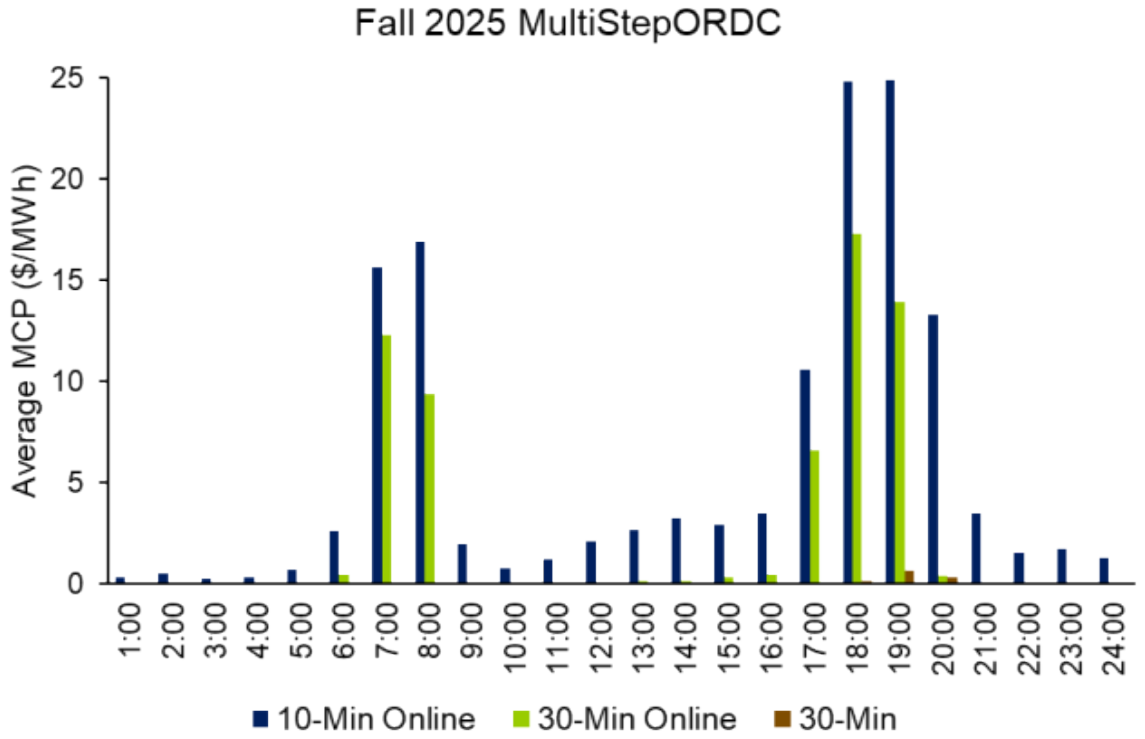
Day-Ahead Simulation Results – AS MCPs

- Fall Average MCPs





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Load Payment Comparison

- The following table shows an approximate yearly day-ahead load* payment comparison between the cases.

Category	Metric	Product/Type	Base Case	Multi-step ORDC	Multi-step ORDC – Base Case
Energy	Load Payment ($M)	N/A	41,887	42,099	212
Reserves**	Load Payment ($M)	10-Min Online	98	169	71
		Primary	28	-	-28
		30-Min Online	-	29	29
		30-Min	0	11	11

*PJM used the fixed load MWh in the simulation to estimate the $ impact - these estimates do not account for all load (price sensitive load, etc.) and therefore should not be used for comparison to other simulations or the IMM proposal.

**The reserves $ impact includes both changes in yearly average MCP and MW provision between the cases.

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Simulation Results Summary

- The day-ahead energy LMPs increased on average in the Multi-step ORDC case compared to the Base Case on a yearly basis.
- The Multi-step ORDC Case results in higher average 10-Min Online and 30-Min Reserve MCPs due to increased requirements.
- The total uplift for 2025 reduced in the Multi-step ORDC Case.
- Seasonal generation-weighted average LMPs remain broadly similar between the Base Case and the Multi-step ORDC Case with increases concentrated around peak hours.
- Seasonal hourly-average ancillary MCPs generally show higher 10-Min Online Reserve prices in the Multi-step ORDC Case across all seasons except summer. The 30-Min Reserve MCPs also show increases in the Multi-step ORDC Case, especially in high stress winter and summer seasons.
- Note, small changes in the unit commitment can result in both positive and negative changes to the LMPs and reserve MCPs.

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