

Fast Start Metrics Update

Zhenyu Fan

Sr. Engineer II, Real-Time Market Operations

Phil D'Antonio

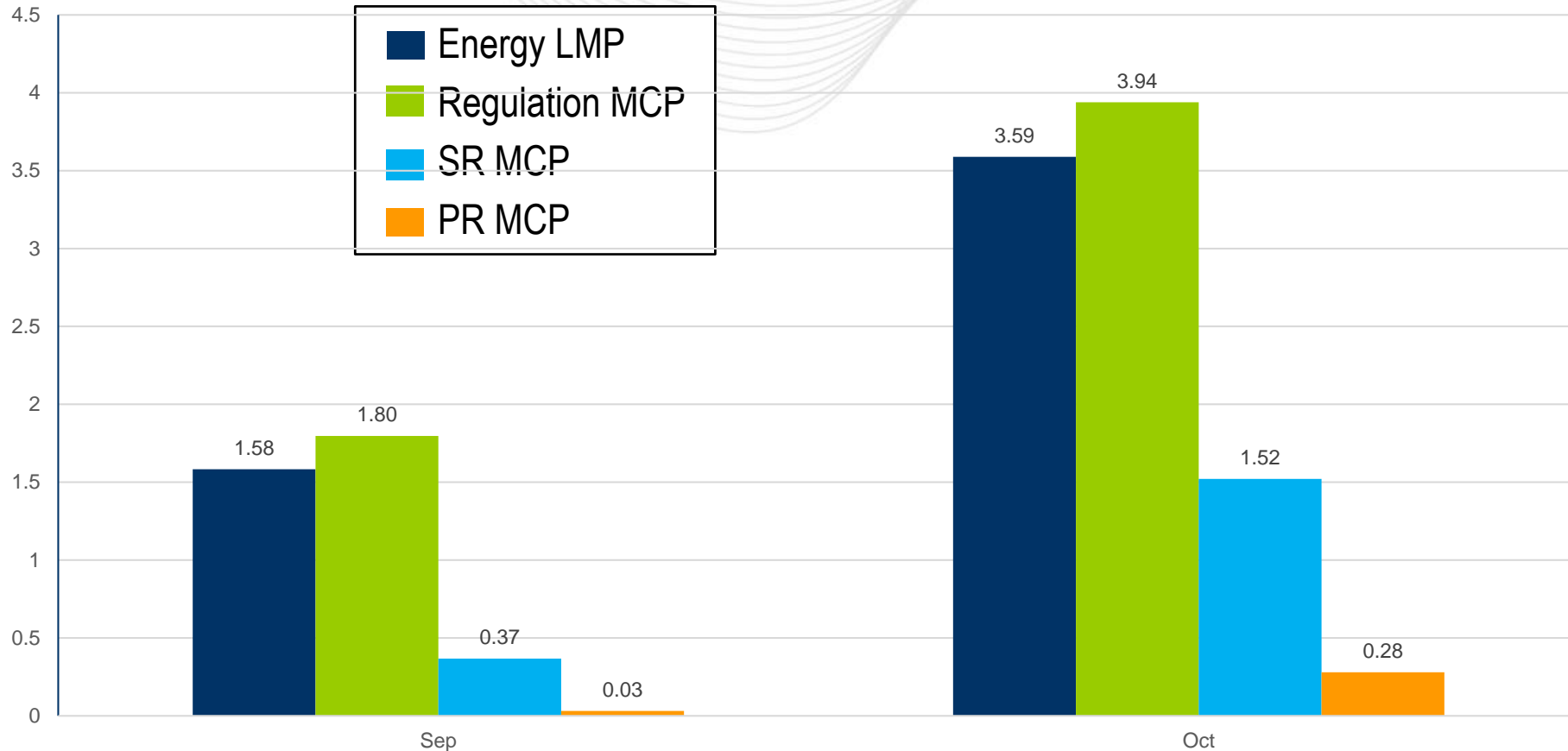
Manager, Real-Time Market Operations

Market Implementation Committee

November 3, 2021

- The average energy price increase was \$2.6/MWh, which is a 5 percent increase for September and October
 - The increase for October is higher than September due to:
 - higher system energy LMP in October
 - higher congestion (outage related)
- Uplift summary is postponed. It will be posted in December's update and will include September through November data
- The December update will be posted as soon as it is available since MIC meeting is scheduled on Dec 1.

Average Increase (\$/MWh)

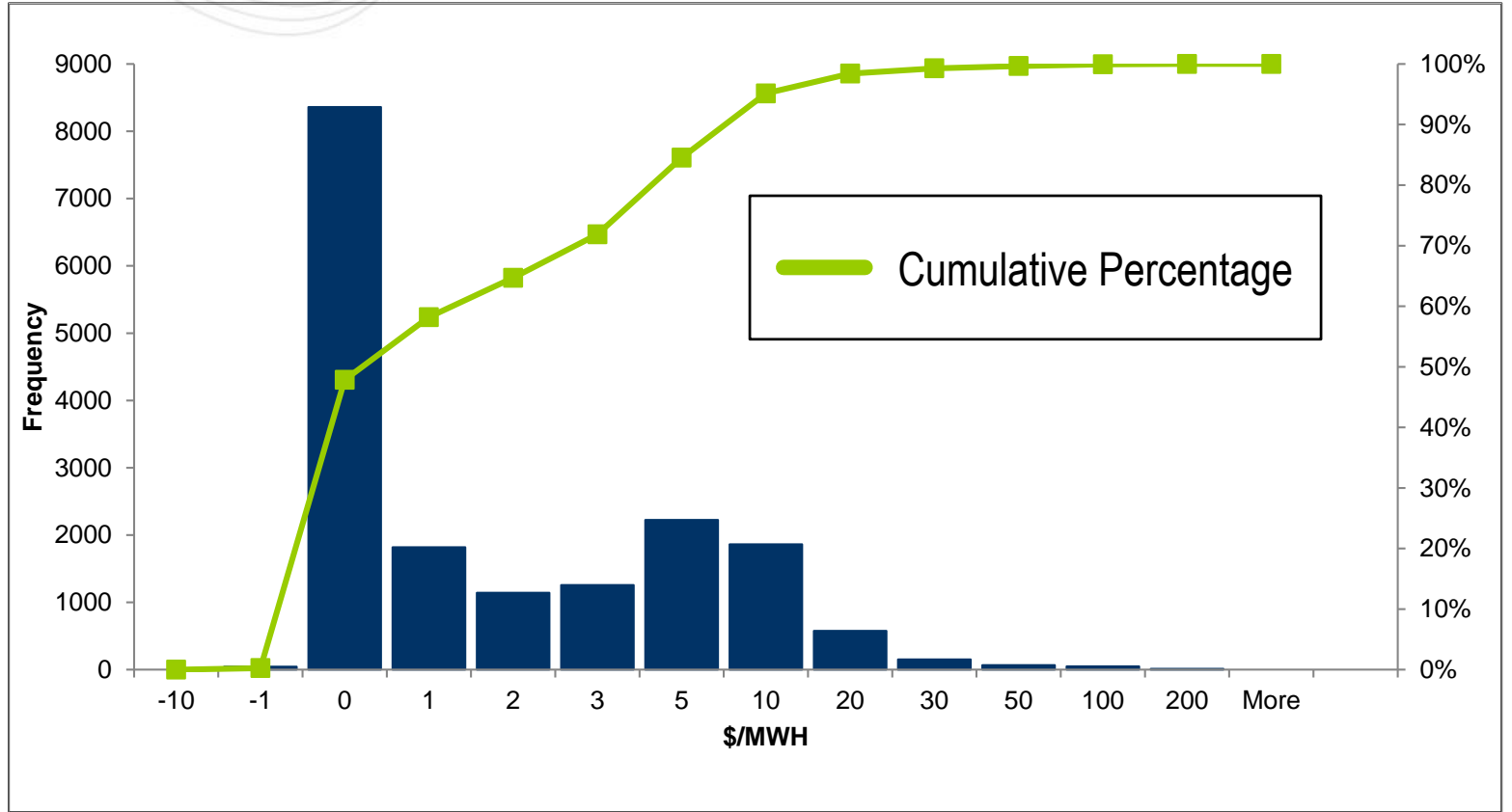


Key Takeaway: Energy and Ancillary Service Market clearing prices all increased due to co-optimization.

Fast-Start Energy LMP Increase (Histogram): Sep - Oct 2021

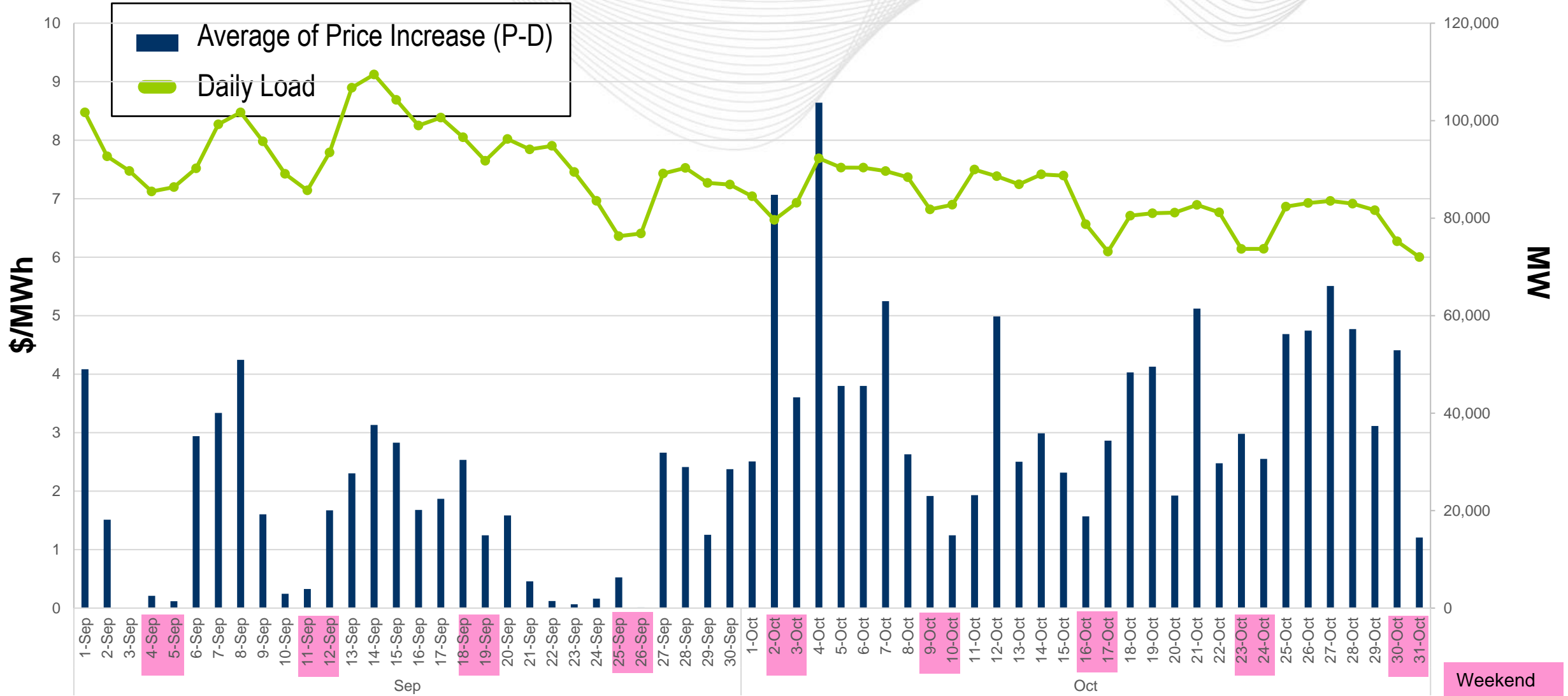
Energy LMP Increase	Frequency	Cumulative
-10	8	0.05%
-1	37	0.26%
0	8361	47.85%
1	1819	58.20%
2	1142	64.70%
3	1258	71.86%
5	2225	84.53%
10	1863	95.13%
20	575	98.41%
30	153	99.28%
50	67	99.66%
100	49	99.94%
200	11	100.00%

**Frequency
(Number of Intervals)**



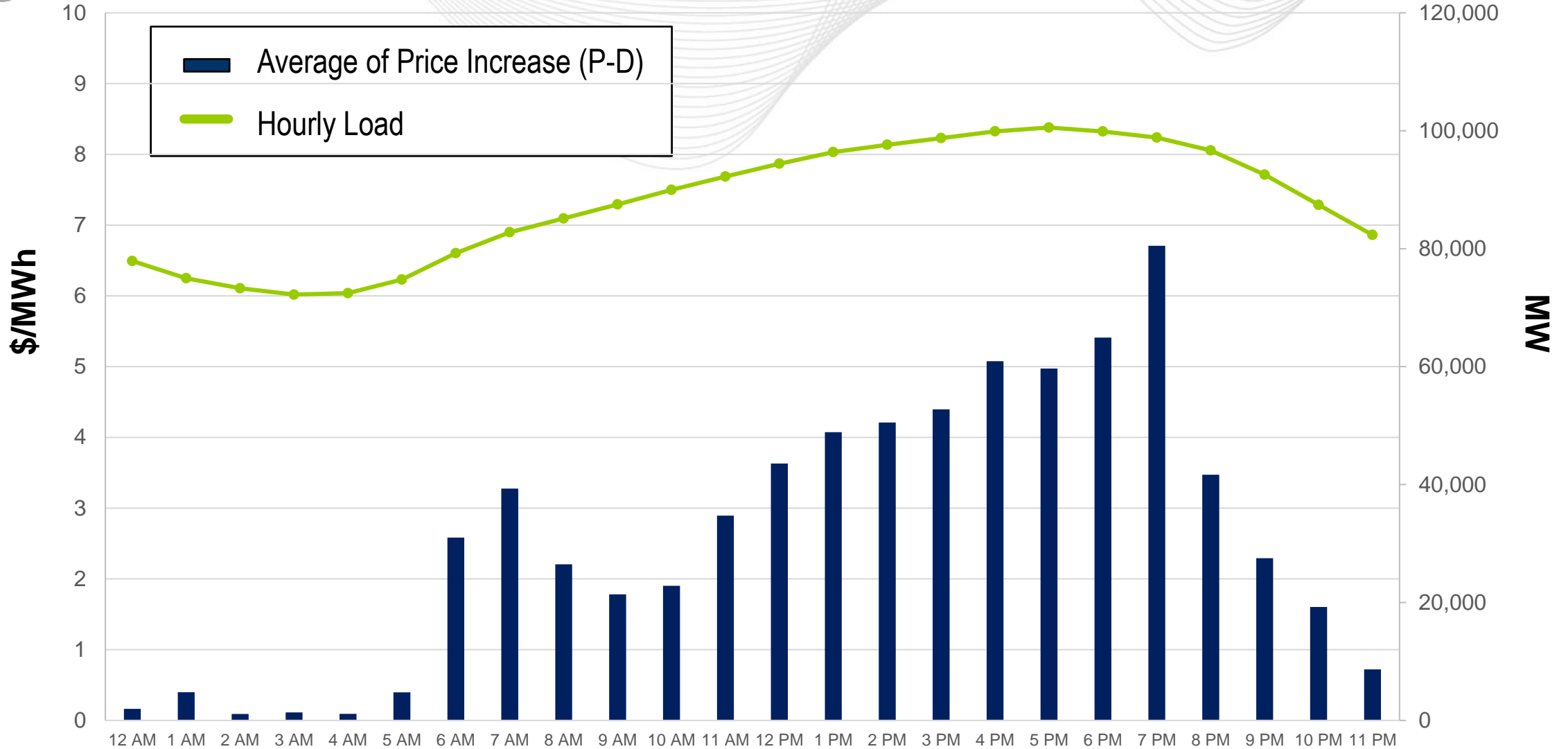
Key Takeaway: About 50% of the time, there was zero impact on Energy LMPs.

Fast-Start Daily Distribution: Sep - Oct 2021



Key Takeaway: LMP increases are more apparent on higher load days; The increases are more impacted by the system energy LMP and outages from October.

Fast-Start Hourly Distribution: Sep-Oct 2021



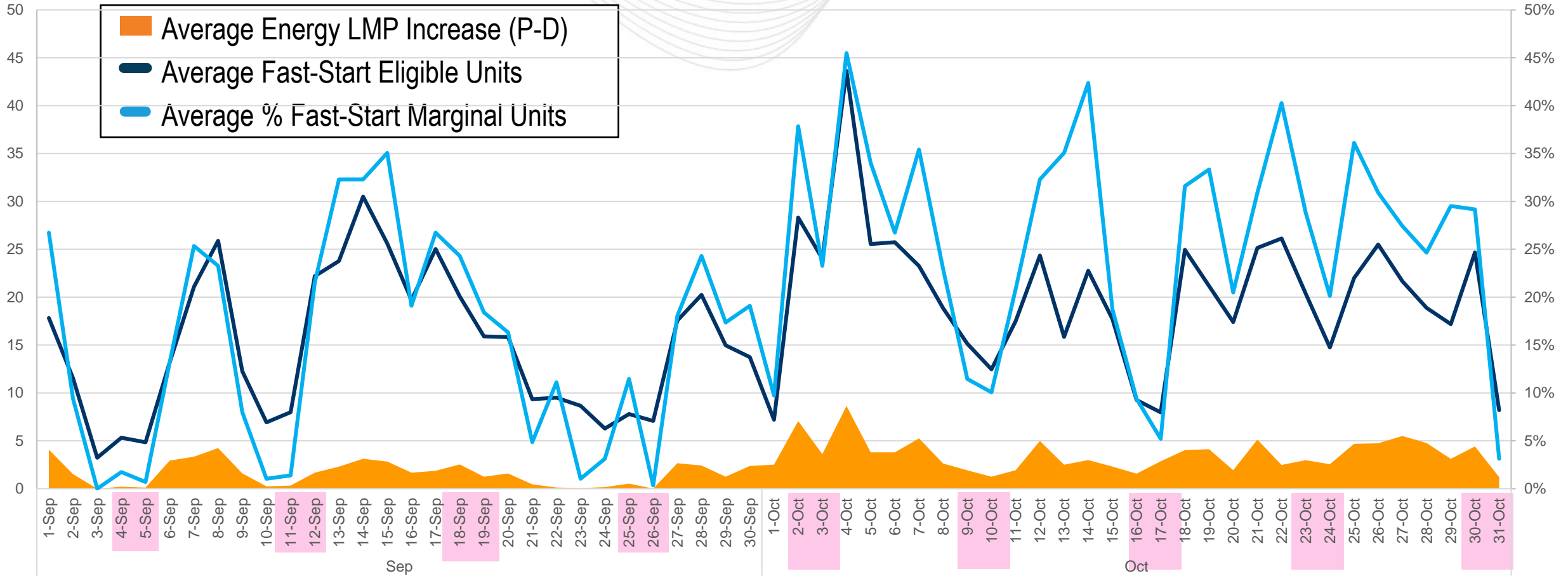
Key Takeaway: Largest impact on LMPs occur during on-peak hours.



Fast-Start Eligible and Marginal Units: Sep - Oct 2021

FS Eligible Units Count

Average %



Key Takeaway: Fast-start units and price increase are correlated.



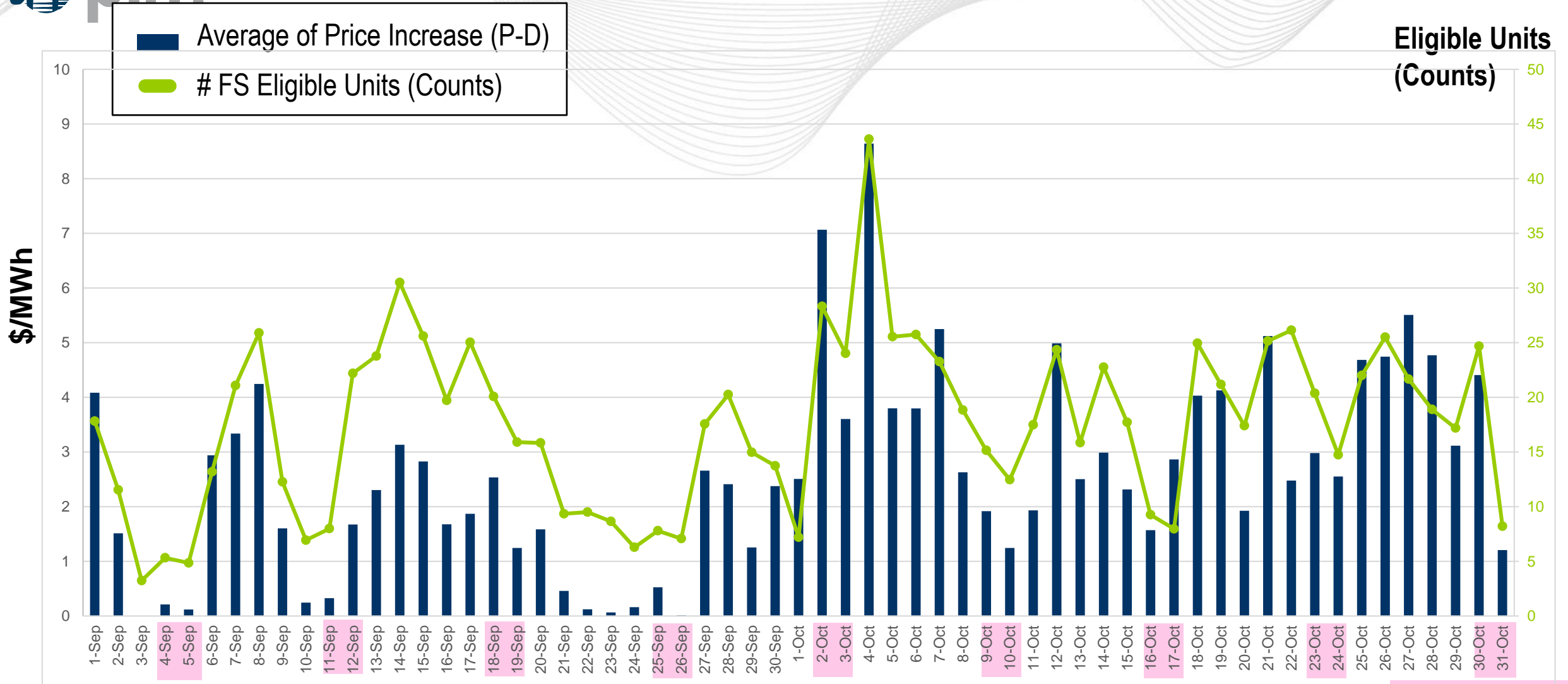
Fast-Start Eligible and Marginal Units: Sep - Oct 2021

	EnergyLMP Increase (\$/MWh)	FS Eligible Units	% FS Marginal
1-Sep	4.08	18	27%
2-Sep	1.51	12	9%
3-Sep	0.00	3	0%
4-Sep	0.21	5	2%
5-Sep	0.12	5	1%
6-Sep	2.94	13	13%
7-Sep	3.34	21	25%
8-Sep	4.24	26	23%
9-Sep	1.60	12	8%
10-Sep	0.24	7	1%
11-Sep	0.33	8	1%
12-Sep	1.67	22	22%
13-Sep	2.30	24	32%
14-Sep	3.13	31	32%
15-Sep	2.83	26	35%
16-Sep	1.68	20	19%
17-Sep	1.87	25	27%
18-Sep	2.53	20	24%
19-Sep	1.24	16	18%
20-Sep	1.59	16	16%
21-Sep	0.46	9	5%
22-Sep	0.12	10	11%
23-Sep	0.07	9	1%
24-Sep	0.16	6	3%
25-Sep	0.52	8	11%
26-Sep	0.01	7	0%
27-Sep	2.66	18	18%
28-Sep	2.41	20	24%
29-Sep	1.25	15	17%
30-Sep	2.37	14	19%

	EnergyLMP Increase (\$/MWh)	FS Eligible Units	% FS Marginal
1-Oct	2.51	7	10%
2-Oct	7.07	28	38%
3-Oct	3.60	24	23%
4-Oct	8.64	44	45%
5-Oct	3.80	26	34%
6-Oct	3.80	26	27%
7-Oct	5.25	23	35%
8-Oct	2.63	19	23%
9-Oct	1.92	15	11%
10-Oct	1.25	12	10%
11-Oct	1.93	17	21%
12-Oct	4.99	24	32%
13-Oct	2.50	16	35%
14-Oct	2.99	23	42%
15-Oct	2.32	18	19%
16-Oct	1.57	9	9%
17-Oct	2.86	8	5%
18-Oct	4.03	25	32%
19-Oct	4.13	21	33%
20-Oct	1.92	17	20%
21-Oct	5.12	25	31%
22-Oct	2.48	26	40%
23-Oct	2.98	20	29%
24-Oct	2.55	15	20%
25-Oct	4.68	22	36%
26-Oct	4.74	25	31%
27-Oct	5.51	22	27%
28-Oct	4.77	19	25%
29-Oct	3.11	17	30%
30-Oct	4.41	25	29%
31-Oct	1.21	8	3%



Fast Start Eligible Units vs. Energy Price Increase

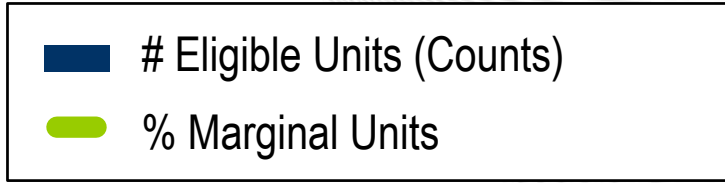


Key Takeaway: More Fast-start eligible units leads to higher energy price increase.

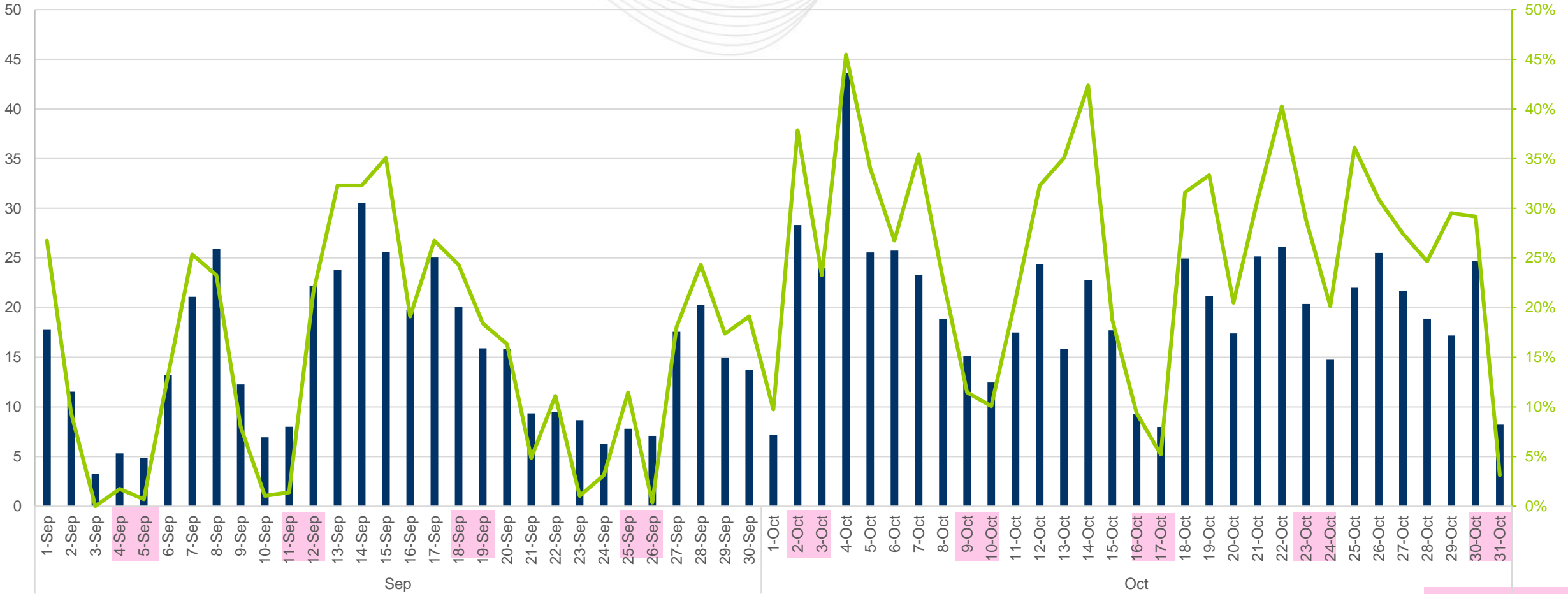


Fast Start Eligible Units vs. % Fast Start on Marginal

Eligible Units
(Counts)



Average %



Key Takeaway: On average Fast-start units are marginal 20% of the time.

Weekend

Facilitator:

Lisa Morelli, Lisa.Morelli@pjm.com

Secretary:

Nicholas DiSciullo, Nicholas.Disciullo@pjm.com

SME:

Zhenyu Fan, Zhenyu.Fan@pjm.com

Phil D'Antonio, Philip.Dantonio@pjm.com

Fast Start Metrics Update



Member Hotline

(610) 666 – 8980

(866) 400 – 8980

custsvc@pjm.com