

Fast Start Metrics Update

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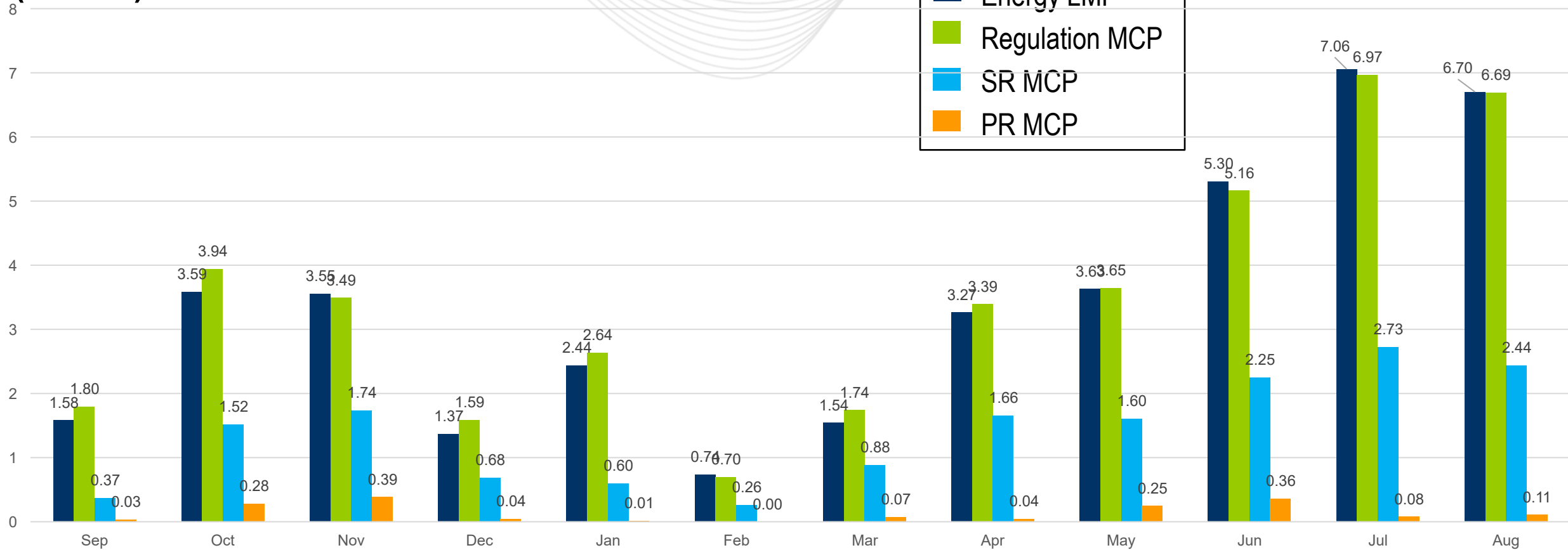
September 7, 2022

- The average energy price increase was \$3.1/MWh, which is 5.5% percent of average system energy LMP from September, 2021 to August, 2022
 - The slight decrease from July to August is due to:
 - Hot weather but not as hot as July and slightly lower load
 - Less online Fast Start units



Fast-Start Pricing: Sep, 2021 – August, 2022

Average Increase
(\$/MWh)



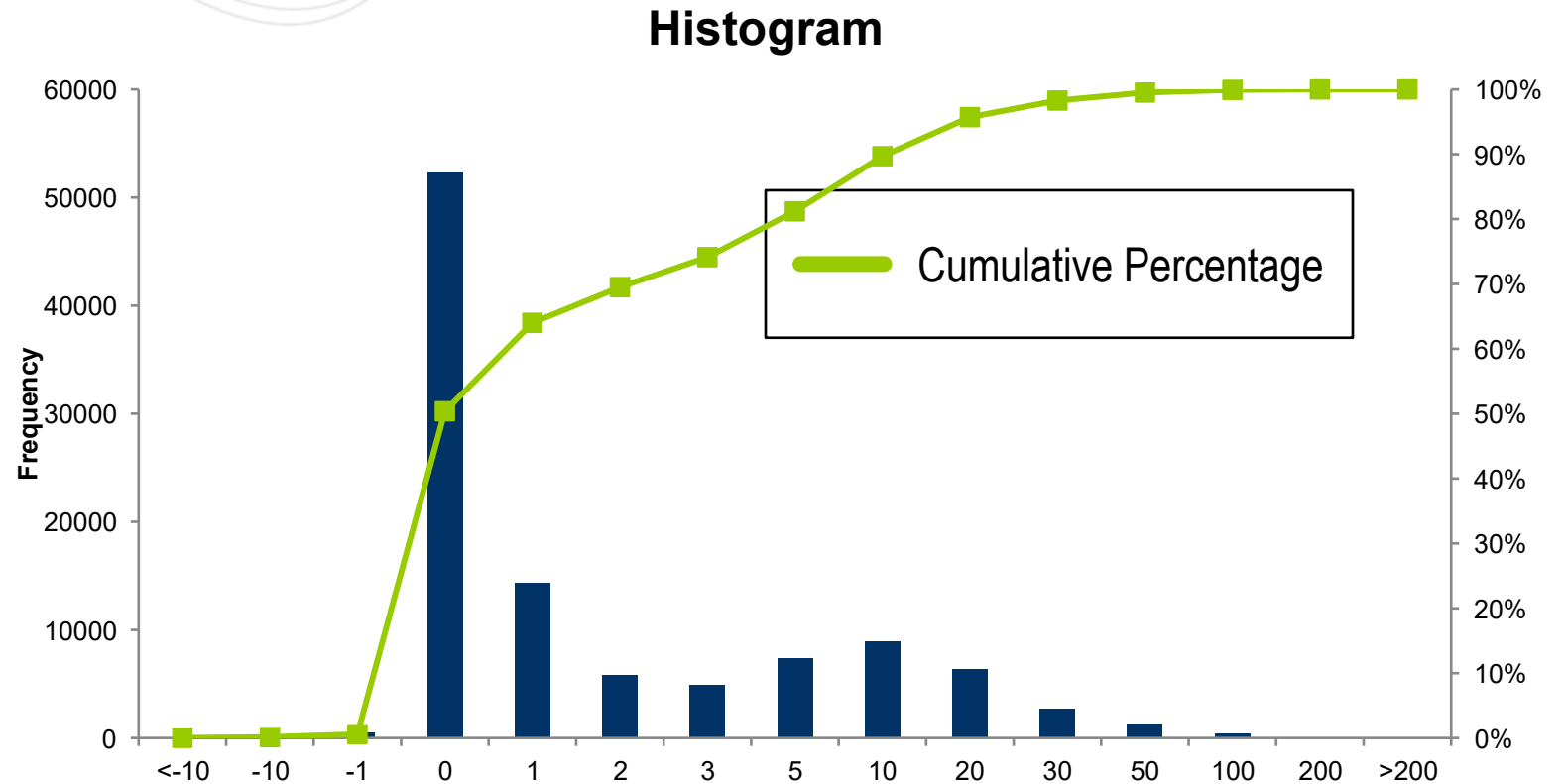
Key Takeaway: Energy and Ancillary Service Market clearing prices all increased due to co-optimization.



Fast-Start Energy LMP Increase (Histogram): Sep, 2021 – August, 2022

Energy LMP Increase	Frequency	Cumulative
$(-\infty, -10]$	25	0.02%
$(-10, -1]$	126	0.14%
$(-1, 0)$	459	0.58%
0	52340	50.37%
$(0, 1]$	14327	64.00%
$(1, 2]$	5787	69.51%
$(2, 3]$	4864	74.13%
$(3, 5]$	7424	81.20%
$(5, 10]$	8938	89.70%
$(10, 20]$	6330	95.72%
$(20, 30]$	2686	98.28%
$(30, 50]$	1302	99.51%
$(50, 100]$	429	99.92%
$(100, 200]$	79	100.00%
$(200, +\infty)$	2	100.00%

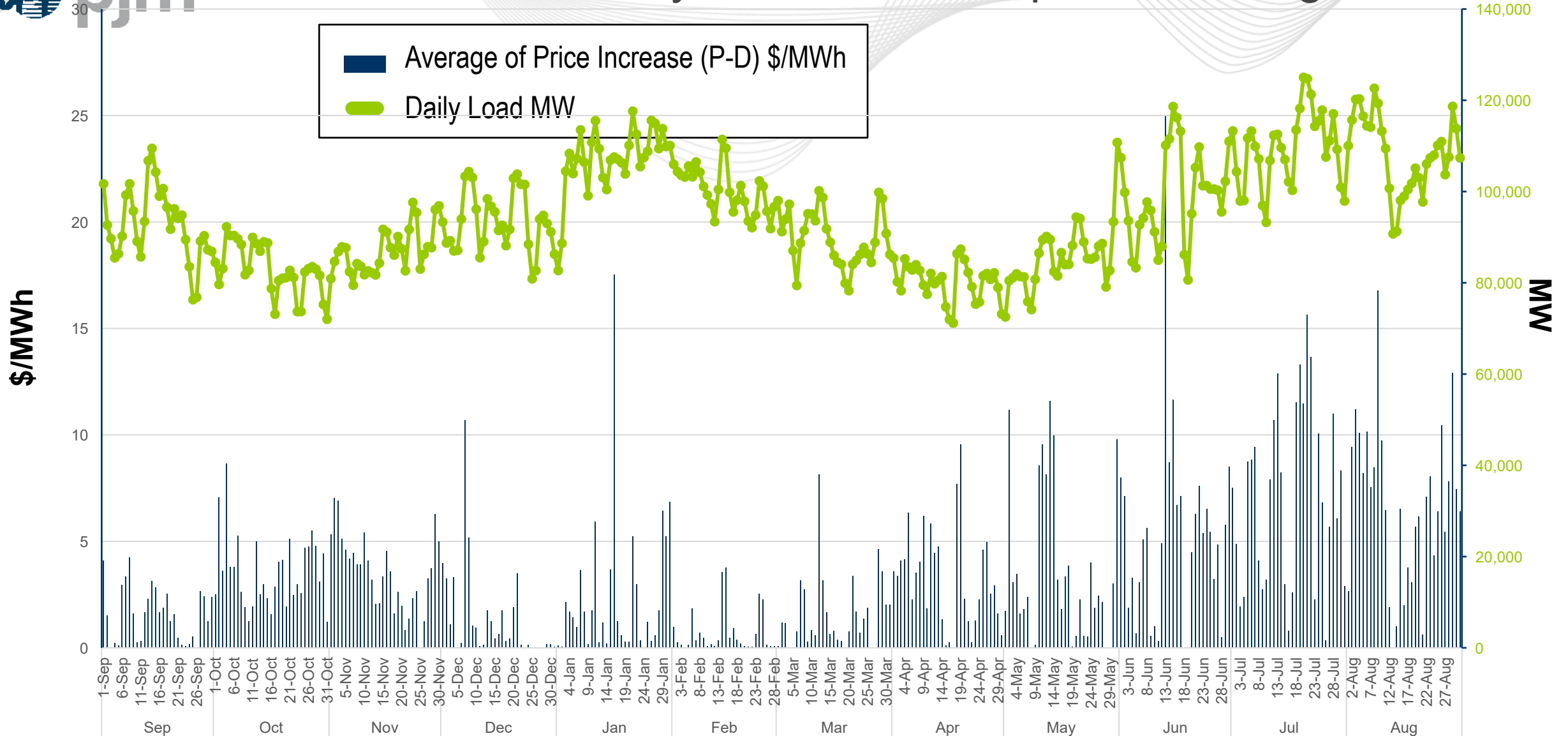
Frequency
(Number of Intervals)



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



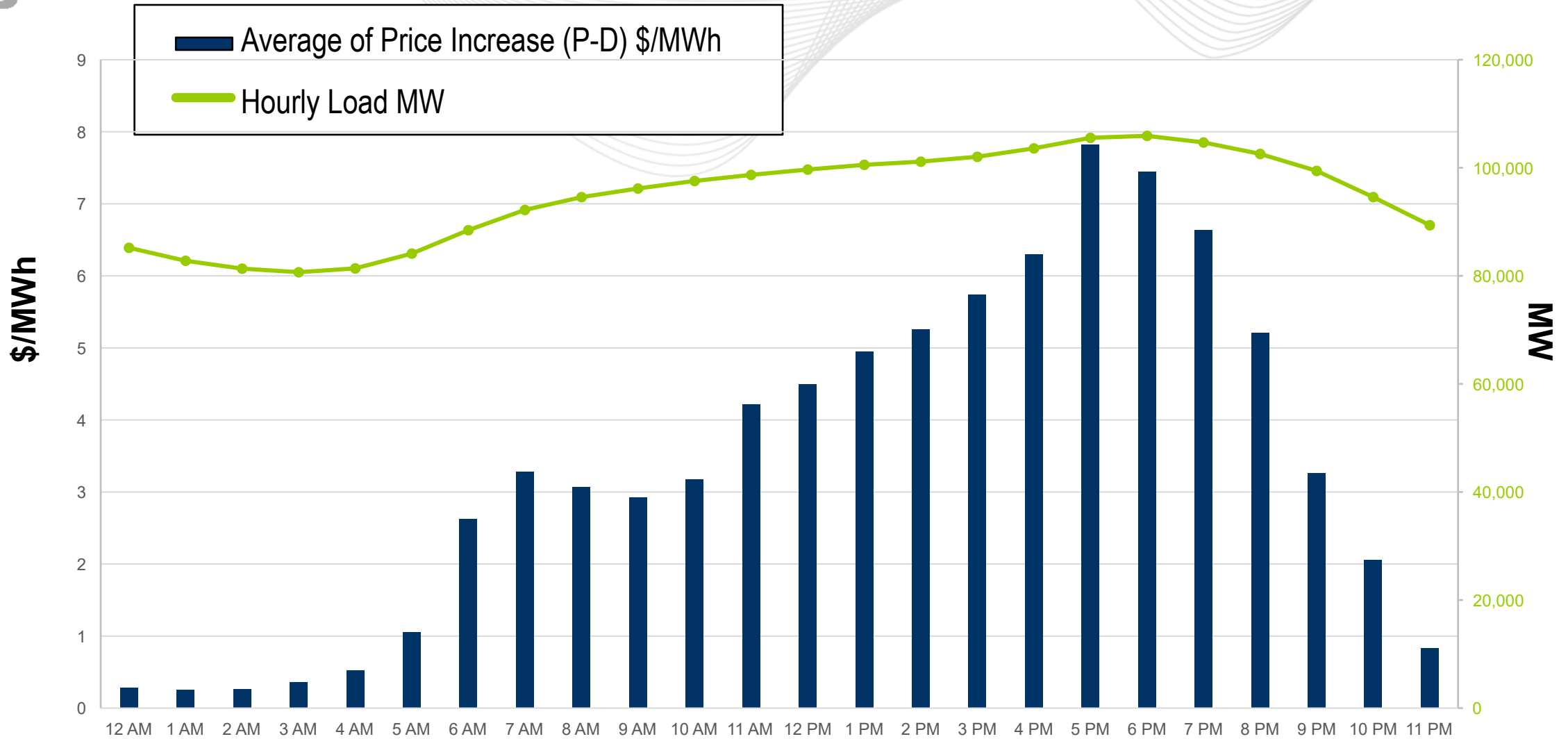
Fast-Start Daily Distribution: Sep, 2021 – August, 2022



Key Takeaway: LMP increases are more impacted by the system energy LMP, outages and load from September, 2021 to August, 2022.



Fast-Start Hourly Distribution: Sep, 2021 – August, 2022

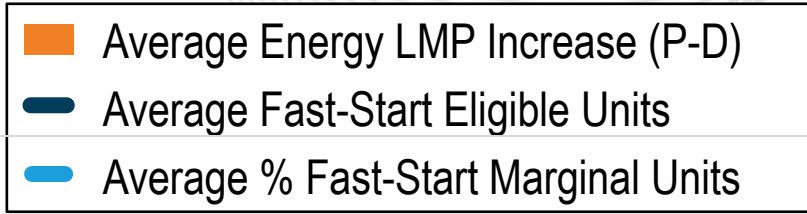


Key Takeaway: Largest impact on LMPs occur during on-peak hours.

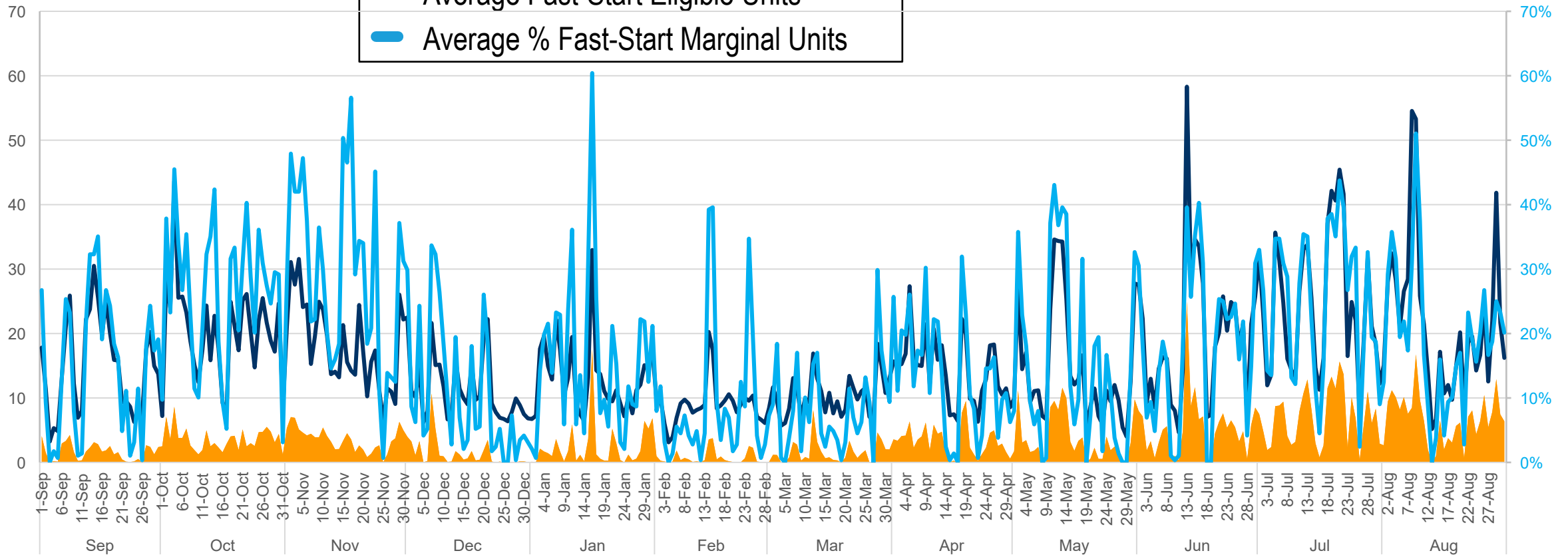


Fast-Start Eligible and Marginal Units: Sep, 2021 – August, 2022

FS Eligible Units Count



Average %



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

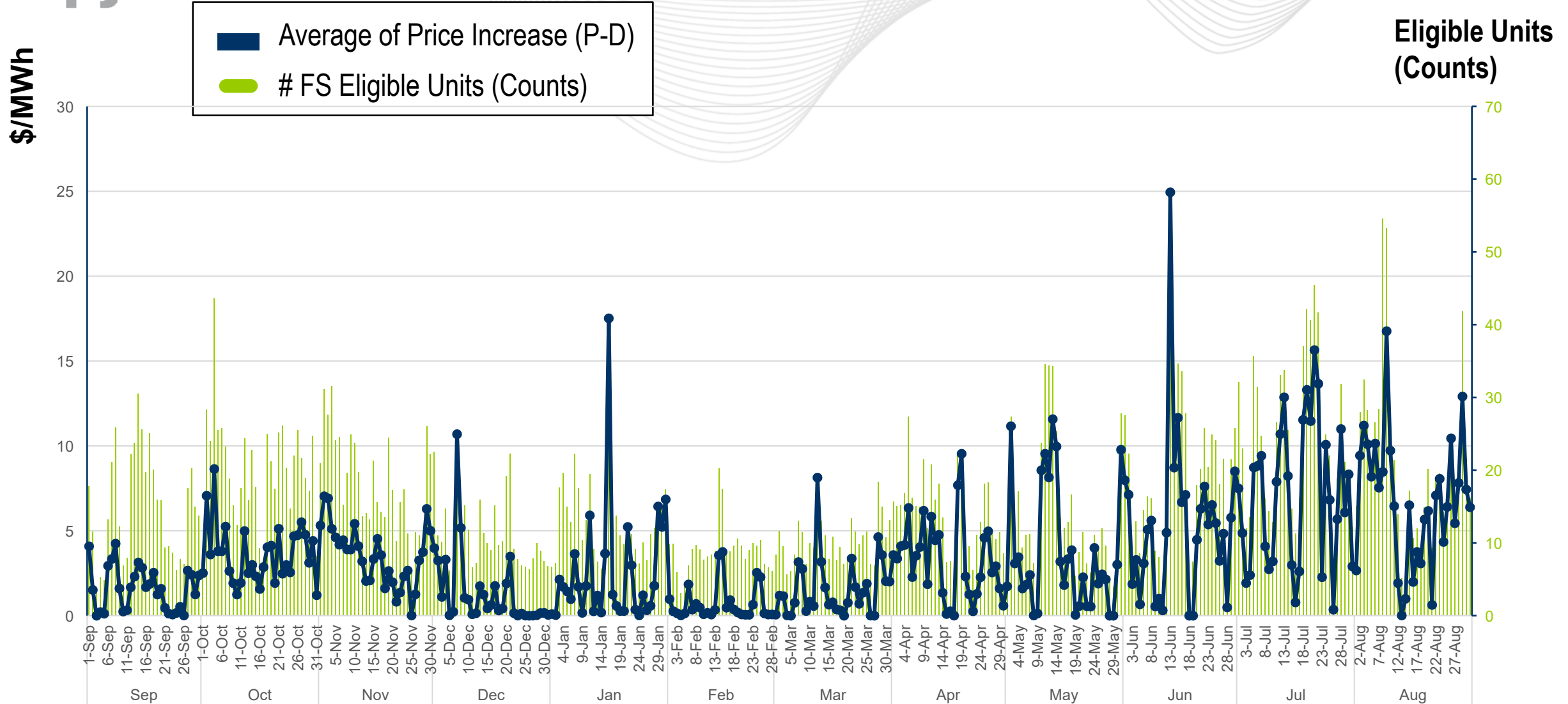


Fast-Start Eligible and Marginal Units: Sep, 2021 – August, 2022

	EnergyLMP Increase (\$/MWh)	FS Eligible Units	% FS Marginal
September	1.58	15	15%
October	3.59	20	26%
November	3.55	18	29%
December	1.37	11	11%
January	2.44	13	16%
February	0.74	9	9%
March	1.54	10	8%
April	3.27	14	14%
May	3.63	14	16%
June	5.30	20	18%
July	7.06	24	25%
August	6.70	21	19%



Fast Start Eligible Units vs. Energy Price Increase



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

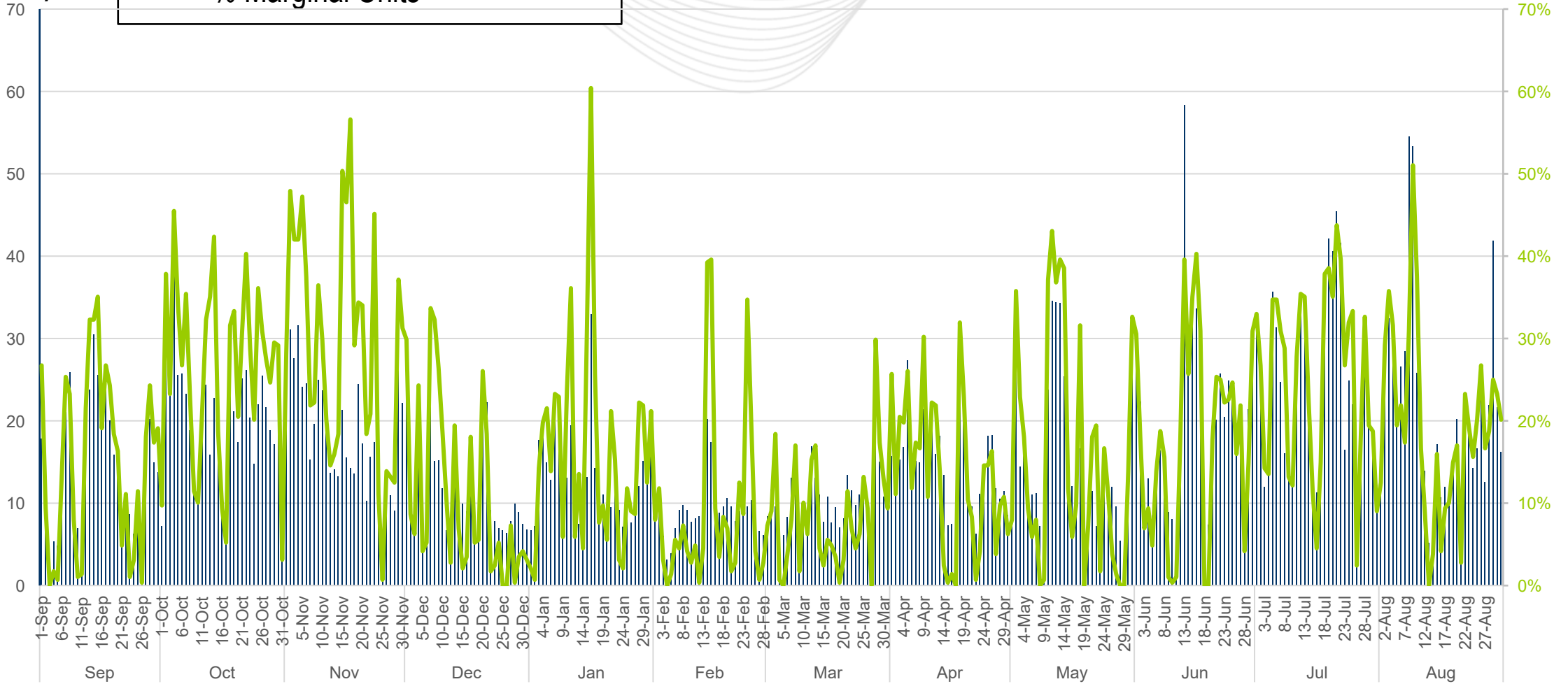


Fast Start Eligible Units vs. % Fast Start on Marginal

Eligible Units (Counts)

- # FS Eligible Units (Counts)
- % Marginal Units

Average %



Key Takeaway: On average Fast-start units are marginal 17% of the time.

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Fast Start Metrics Update



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