

Fast Start Metrics Update

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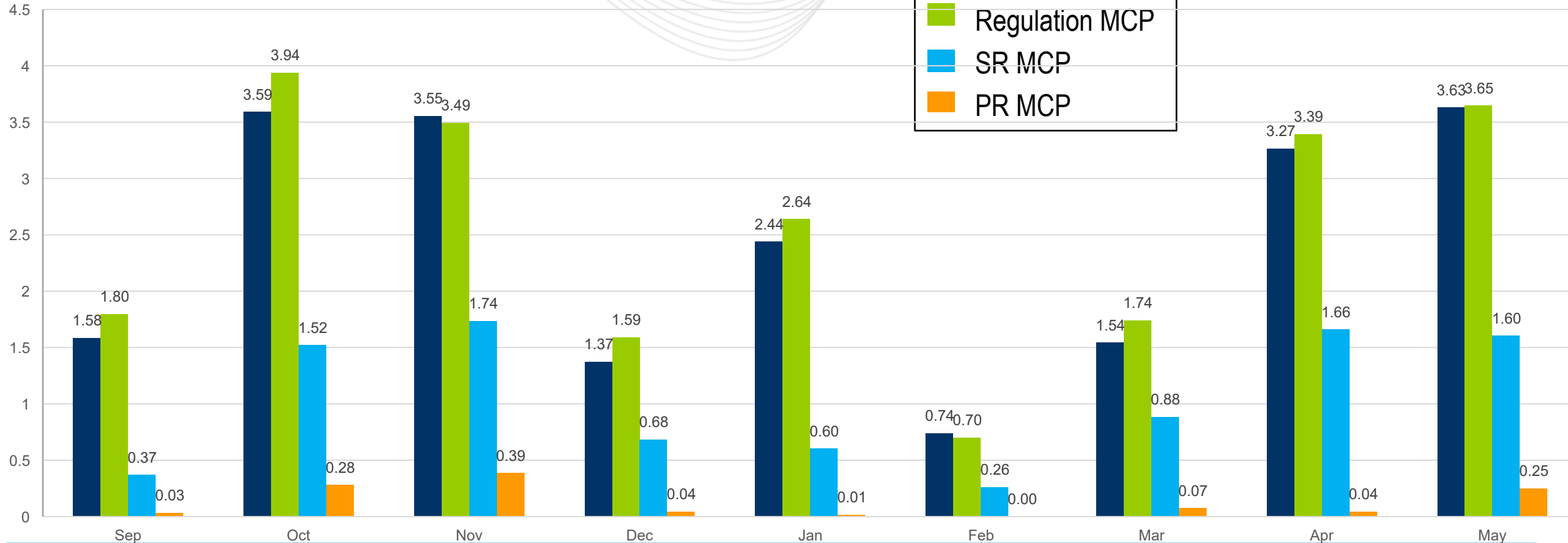
June 8, 2022

- The average energy price increase was \$2.43/MWh, which is 4.6 percent of average system energy LMP from September, 2021 to May, 2022
 - The slight increase from April to May is due to:
 - Transmission outages and congestion
 - Warmer weather and higher load



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

Average Increase
(\$/MWh)



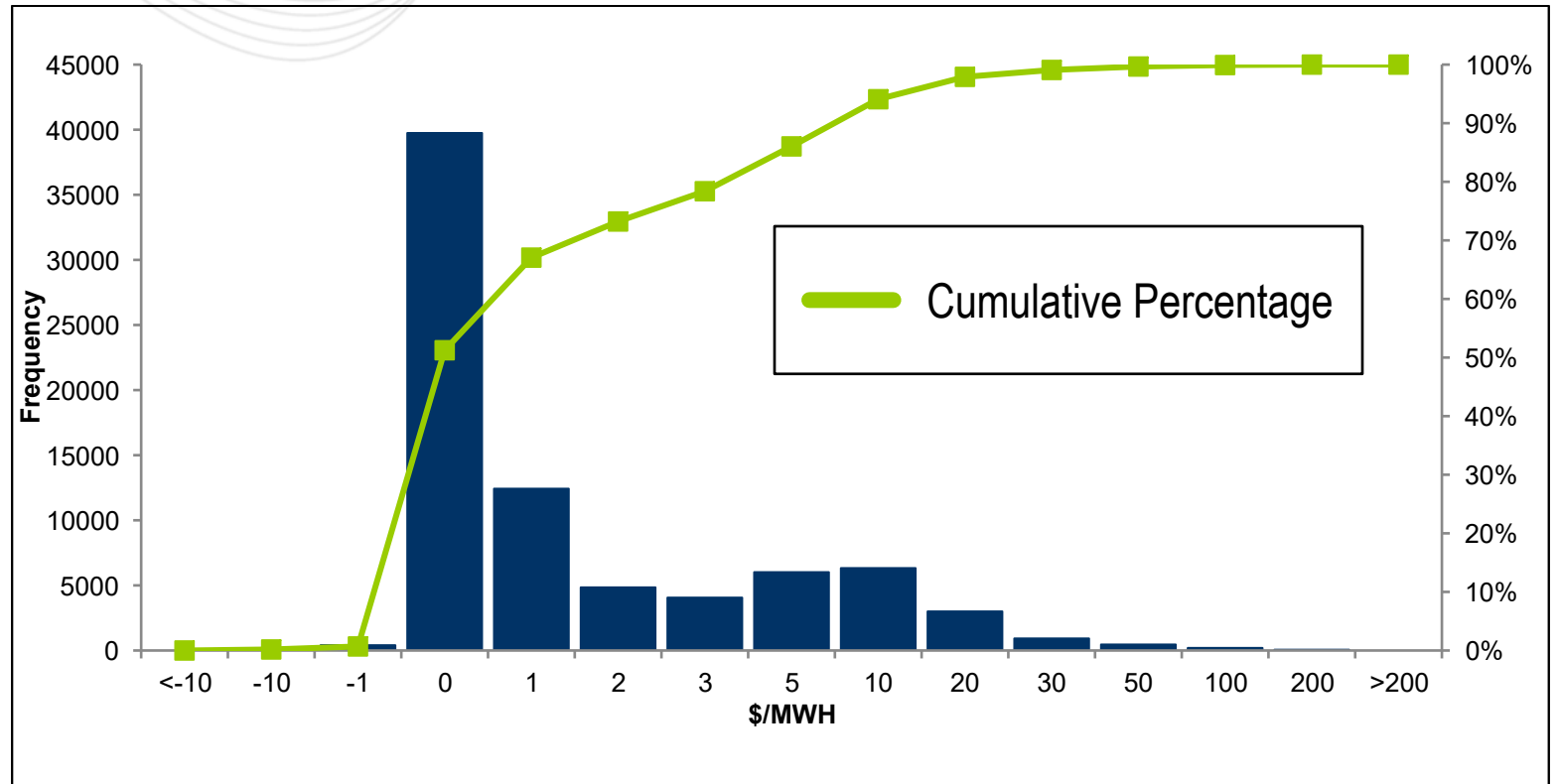
Key Takeaway: Energy and Ancillary Service Market clearing prices all increased due to co-optimization.



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

Energy LMP Increase	Frequency	Cumulative
$(-\infty, -10]$	23	0.03%
$(-10, -1]$	114	0.17%
$(-1, 0)$	406	0.69%
0	39748	51.25%
$(0, 1]$	12428	67.05%
$(1, 2]$	4849	73.22%
$(2, 3]$	4062	78.39%
$(3, 5]$	6017	86.04%
$(5, 10]$	6329	94.09%
$(10, 20]$	3002	97.91%
$(20, 30]$	926	99.08%
$(30, 50]$	460	99.67%
$(50, 100]$	199	99.92%
$(100, 200]$	61	100.00%

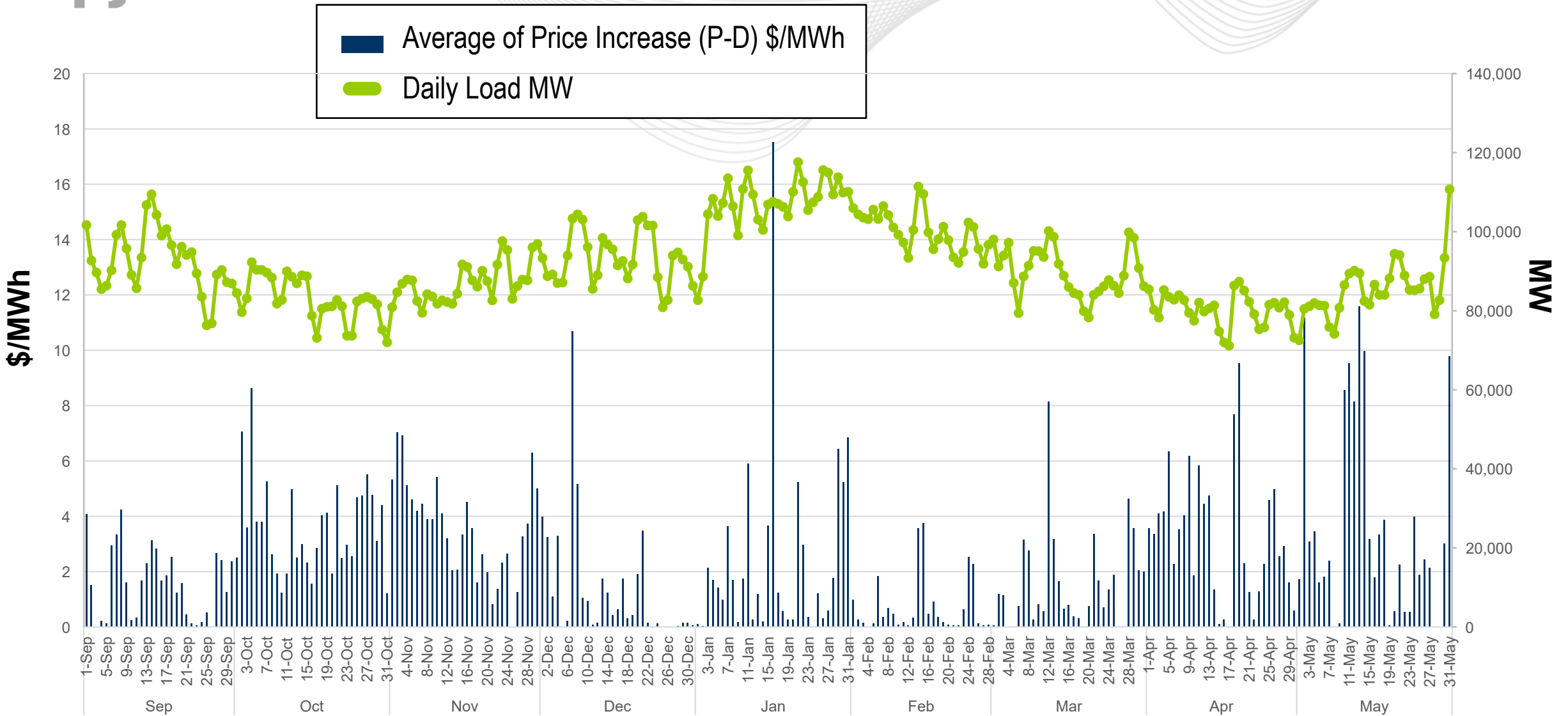
**Frequency
(Number of Intervals)**



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



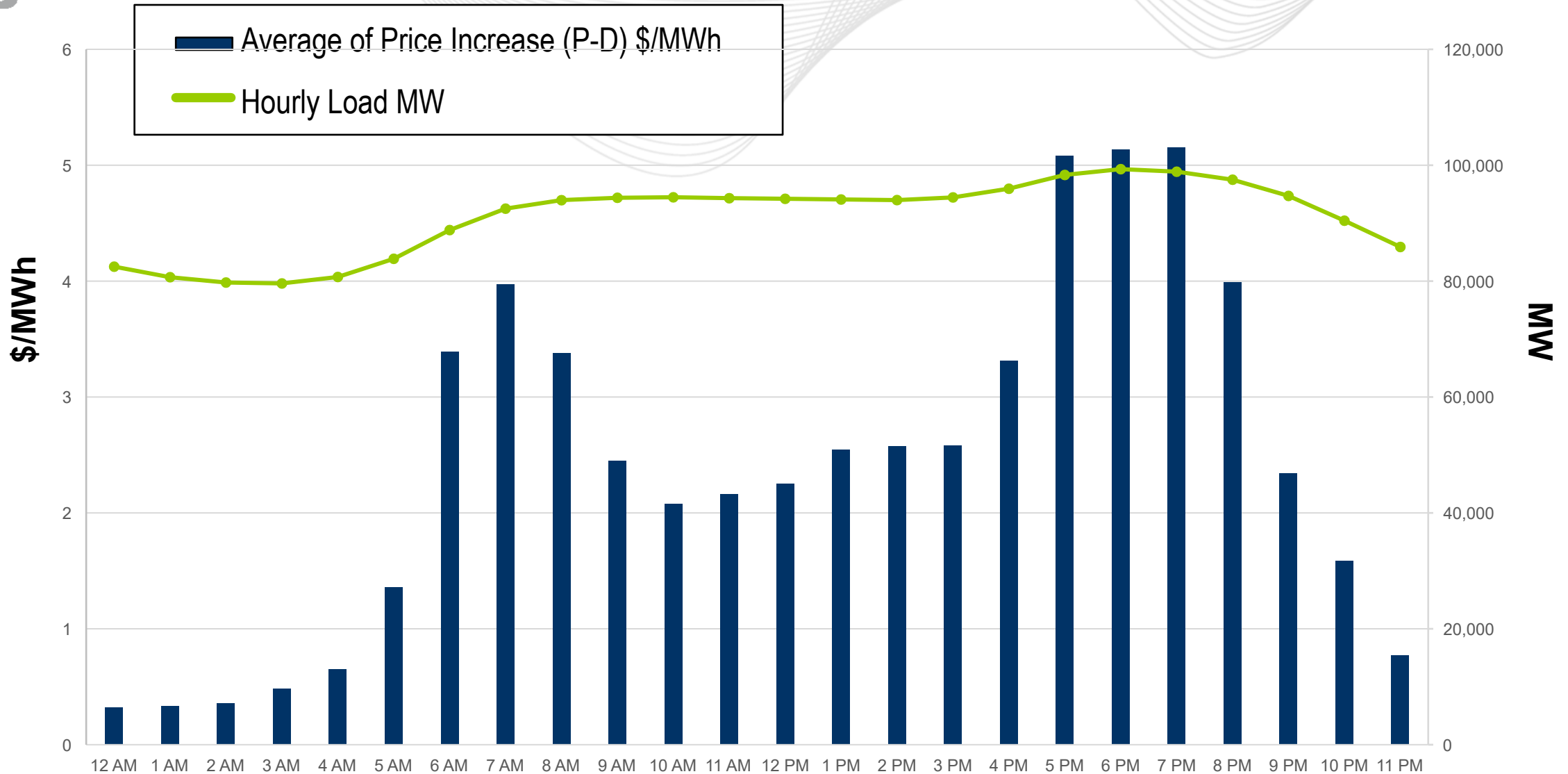
Fast-Start Daily Distribution: Sep, 2021 – May, 2022



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



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



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

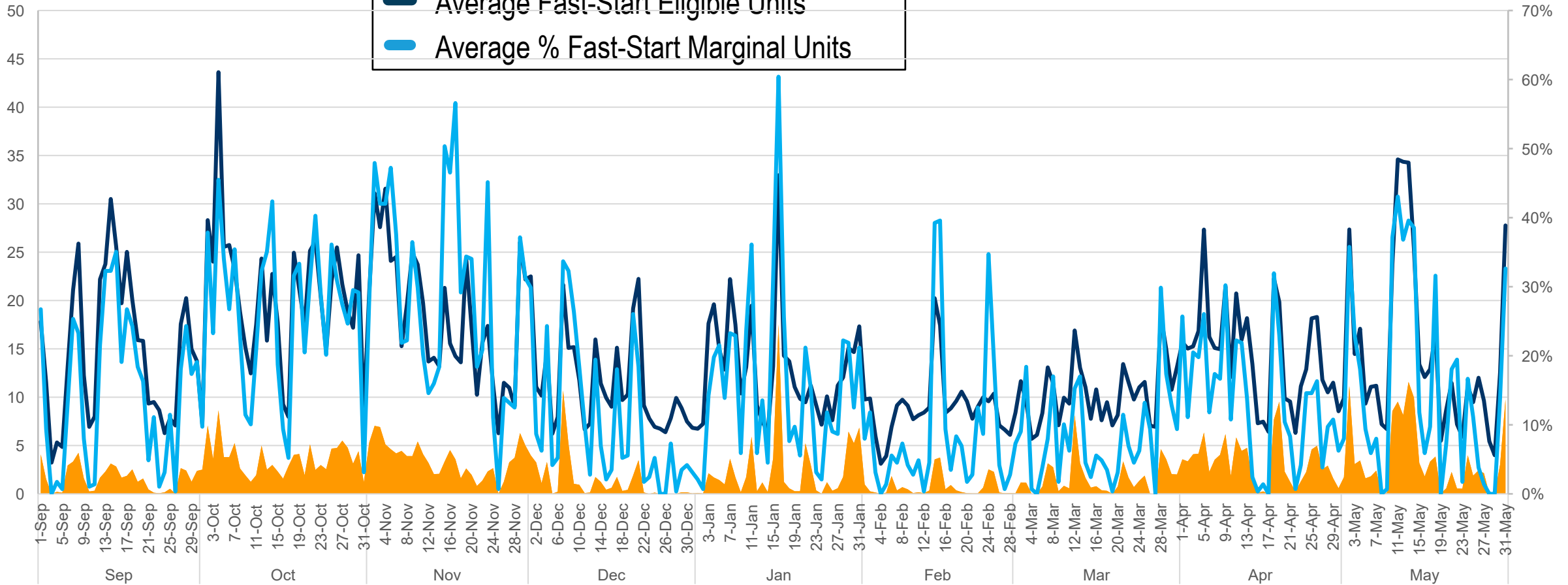


Fast-Start Eligible and Marginal Units: Sep, 2021 – May, 2022

FS Eligible Units Count

- Average Energy LMP Increase (P-D)
- Average Fast-Start Eligible Units
- Average % Fast-Start Marginal Units

Average %



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

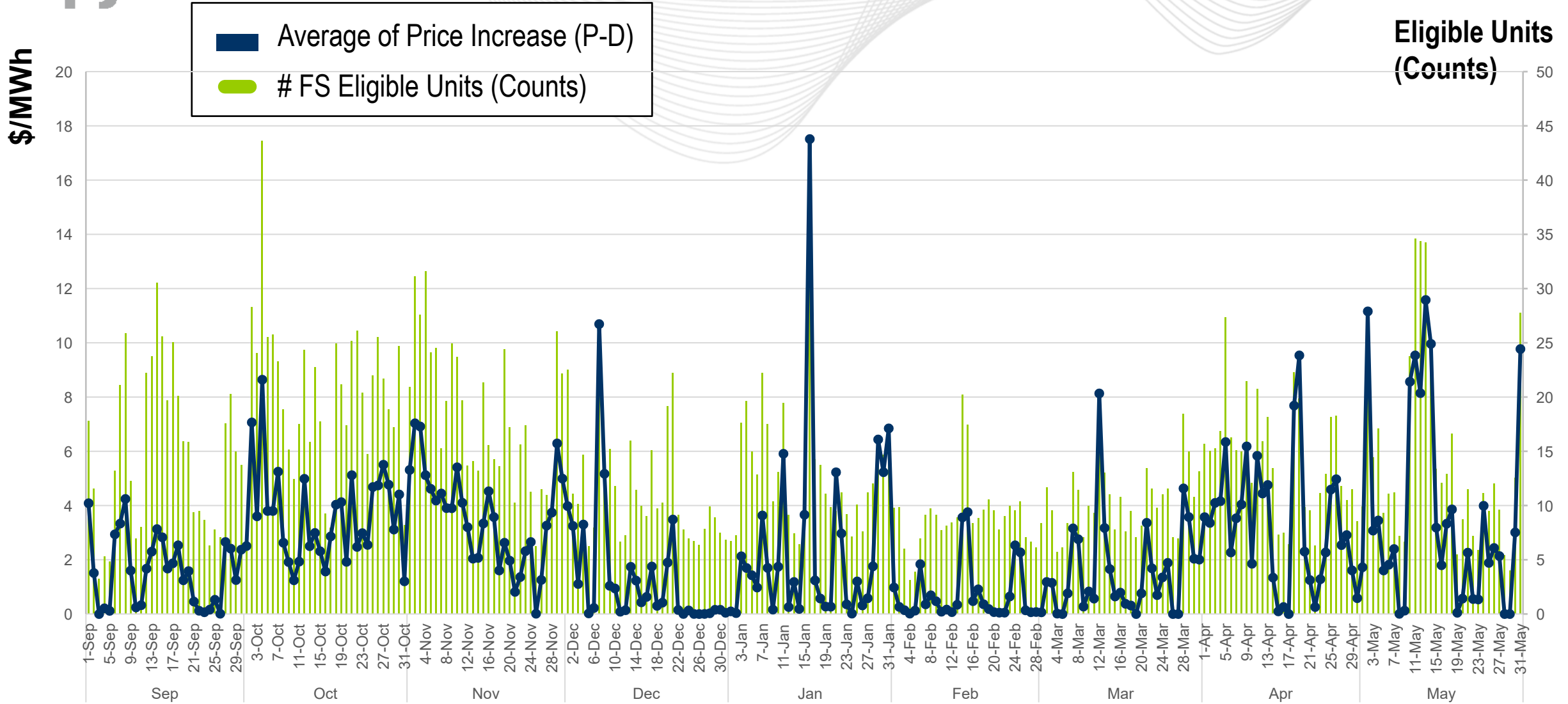


Fast-Start Eligible and Marginal Units: Sep, 2021 – May, 2022

	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%



Fast Start Eligible Units vs. Energy Price Increase



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

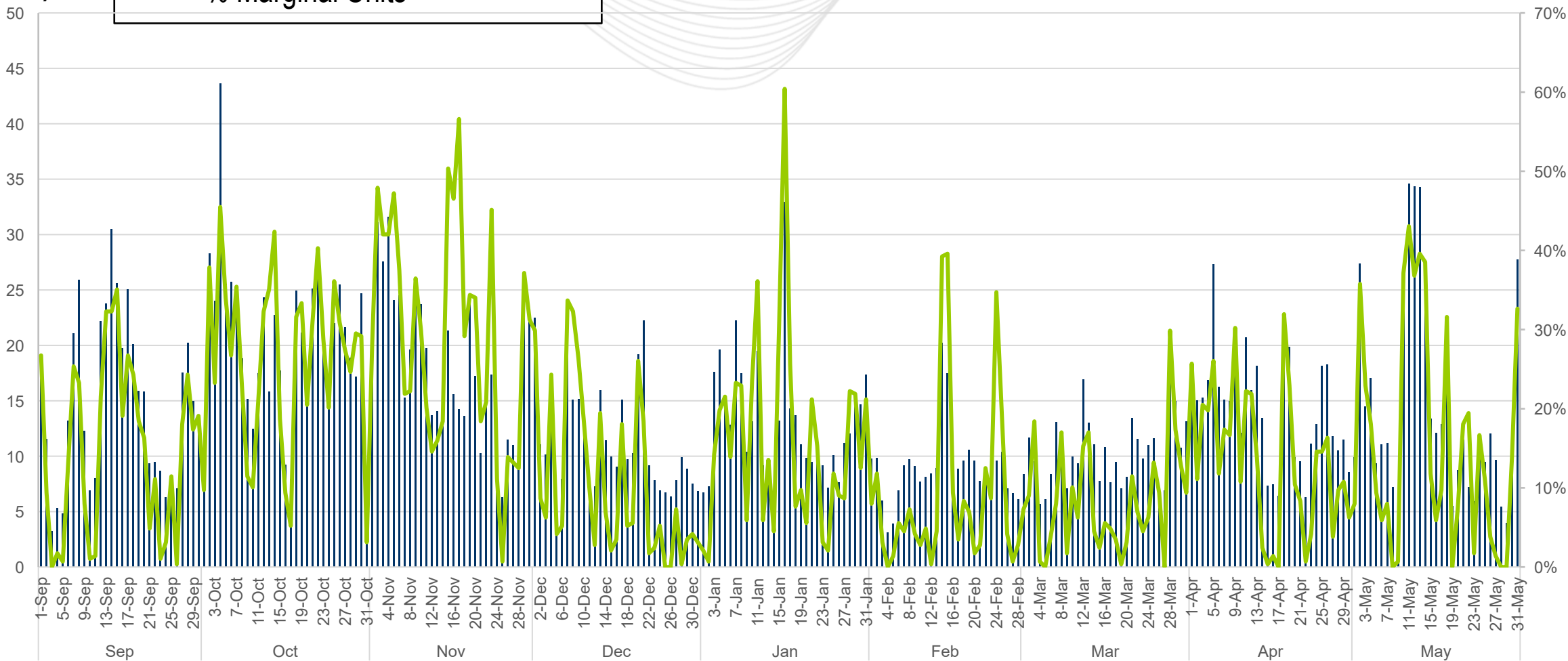


Fast Start Eligible Units vs. % Fast Start on Marginal

Eligible Units (Counts)

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

Average %



Key Takeaway: On average Fast-start units are marginal 16% of the time.

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Fast Start Metrics Update



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