

Fast Start Metrics Update

Zhenyu Fan

Sr. Engineer II, Real-Time Market Operations

Brian Chmielewski

Manager, Real-Time Market Operations

Market Implementation Committee

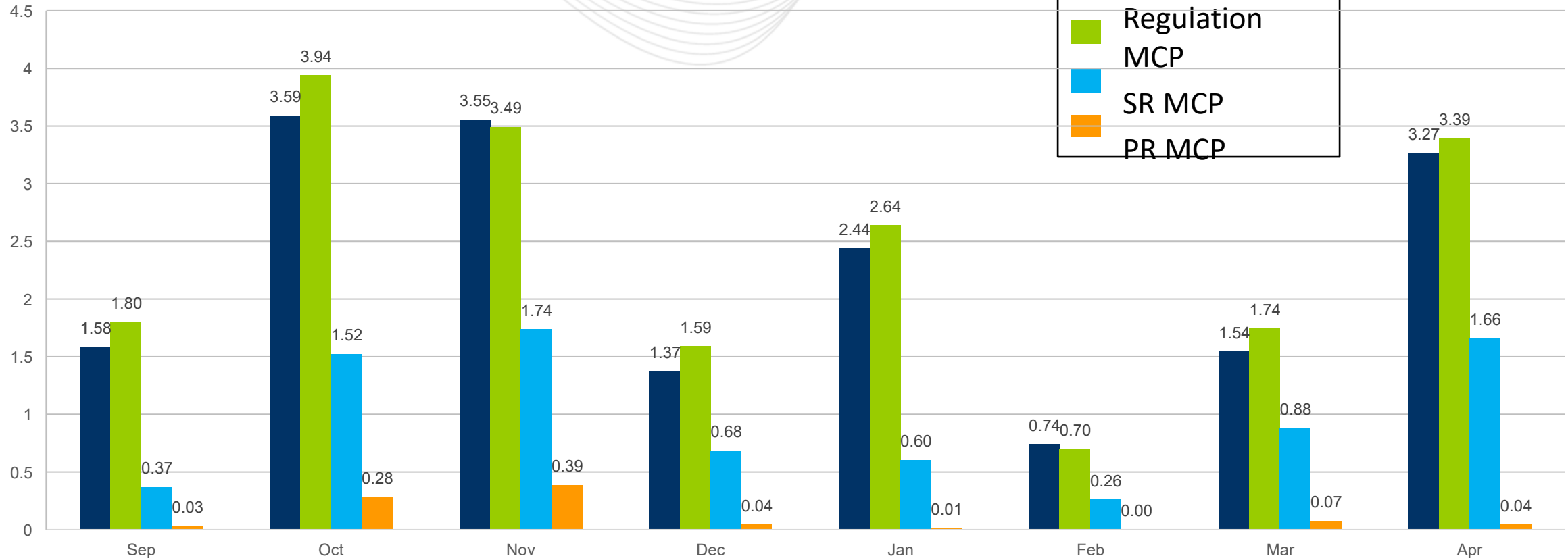
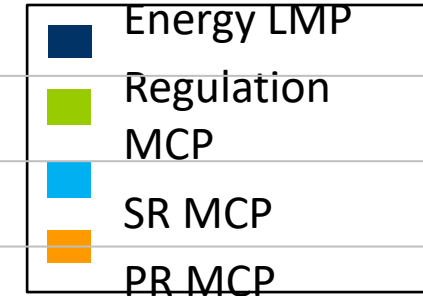
May 11, 2022

- The average energy price increase was \$2.27/MWh, which is 4.5 percent of average system energy LMP from September, 2021 to April, 2022
 - The increase from March to April is due to:
 - More transmission outages



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

**Average Increase
(\$/MWh)**



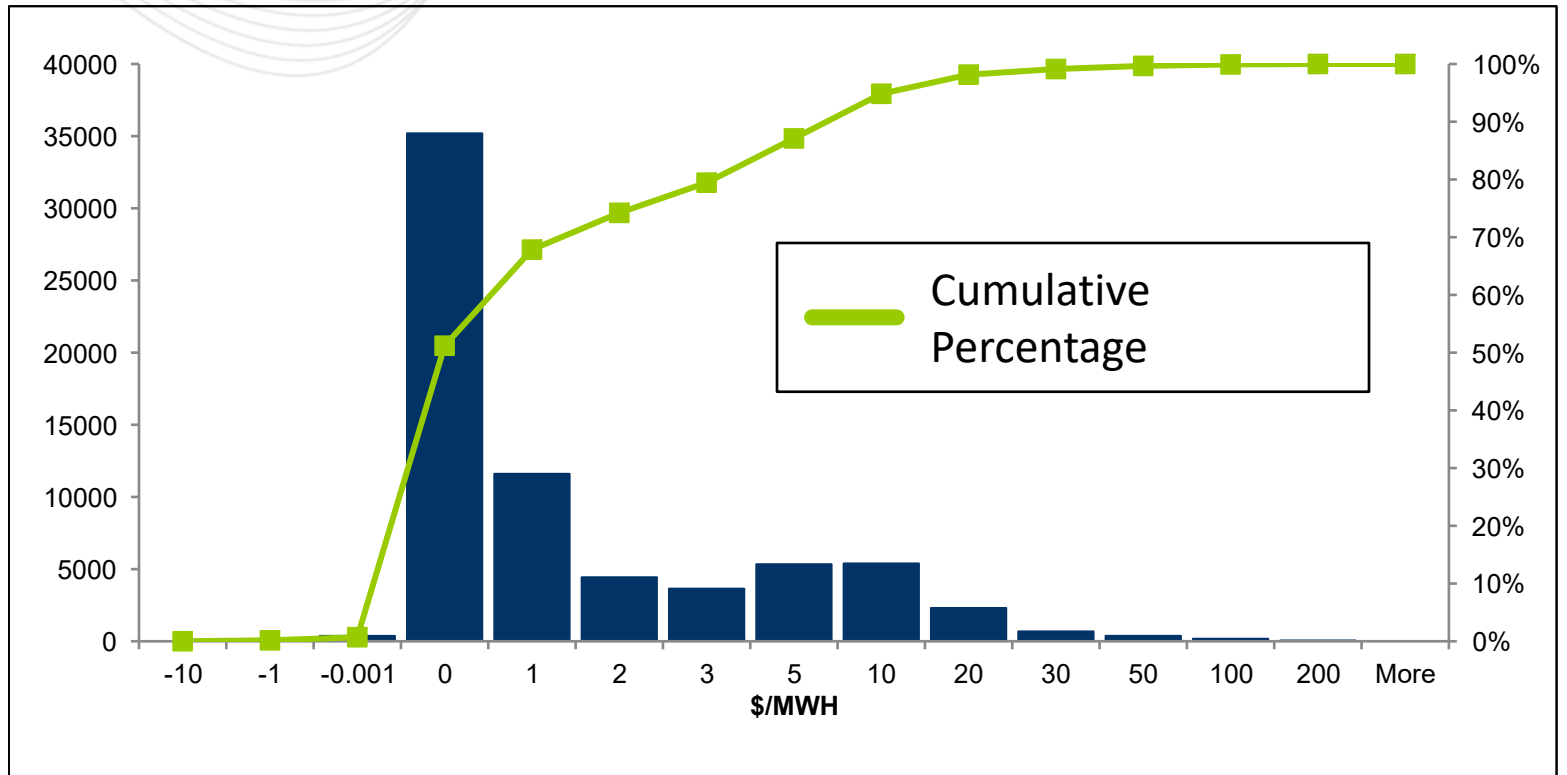
Key Takeaway: Energy and Ancillary Service Market clearing prices all increased due to co-optimization.



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

Energy LMP Increase	Frequency	Cumulative
$(-\infty, -10]$	21	0.03%
$(-10, -1]$	94	0.17%
$(-1, 0)$	373	0.70%
0	35196	51.20%
$(0, 1]$	11603	67.85%
$(1, 2]$	4435	74.21%
$(2, 3]$	3647	79.44%
$(3, 5]$	5339	87.10%
$(5, 10]$	5393	94.84%
$(10, 20]$	2307	98.15%
$(20, 30]$	683	99.13%
$(30, 50]$	375	99.67%
$(50, 100]$	175	99.92%
$(100, 200]$	55	100.00%

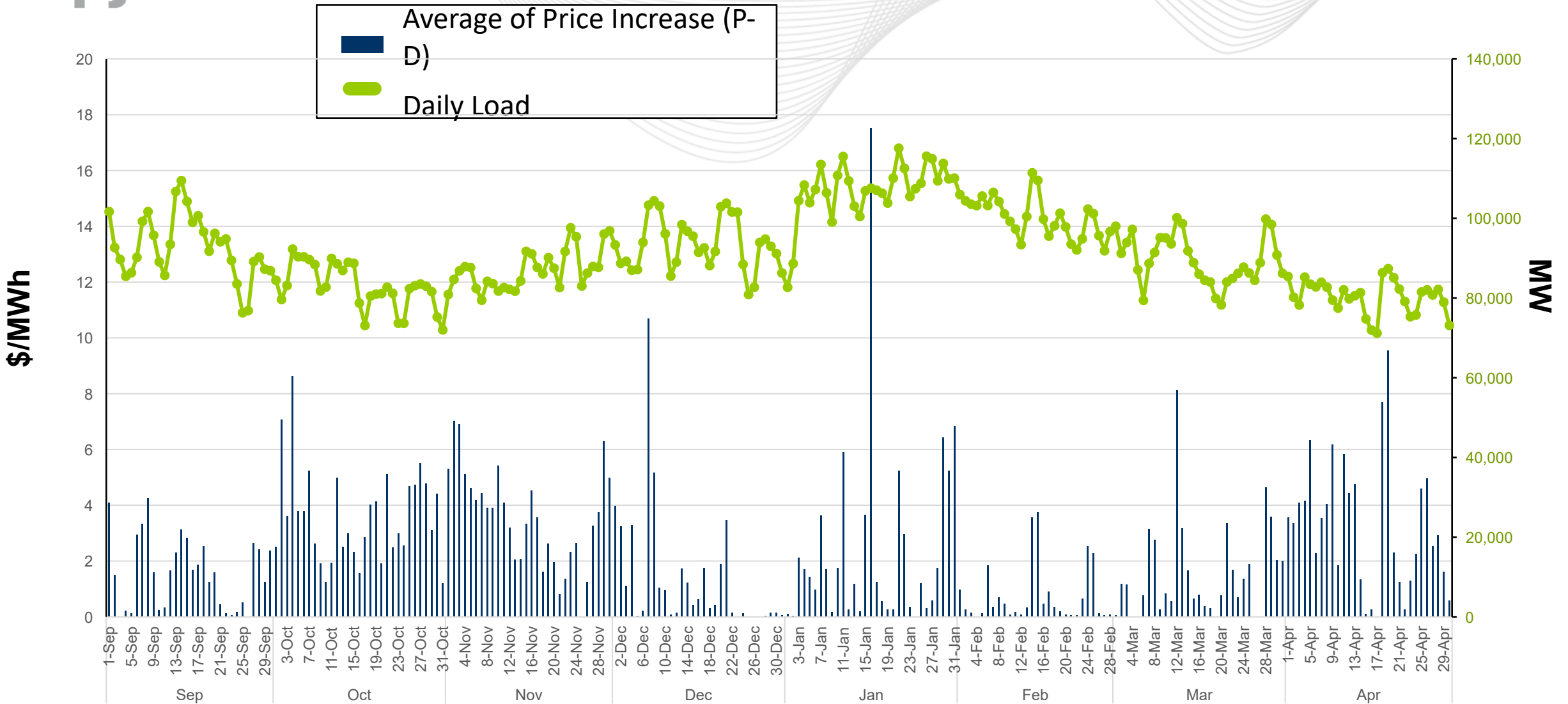
Frequency
(Number of Intervals)



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

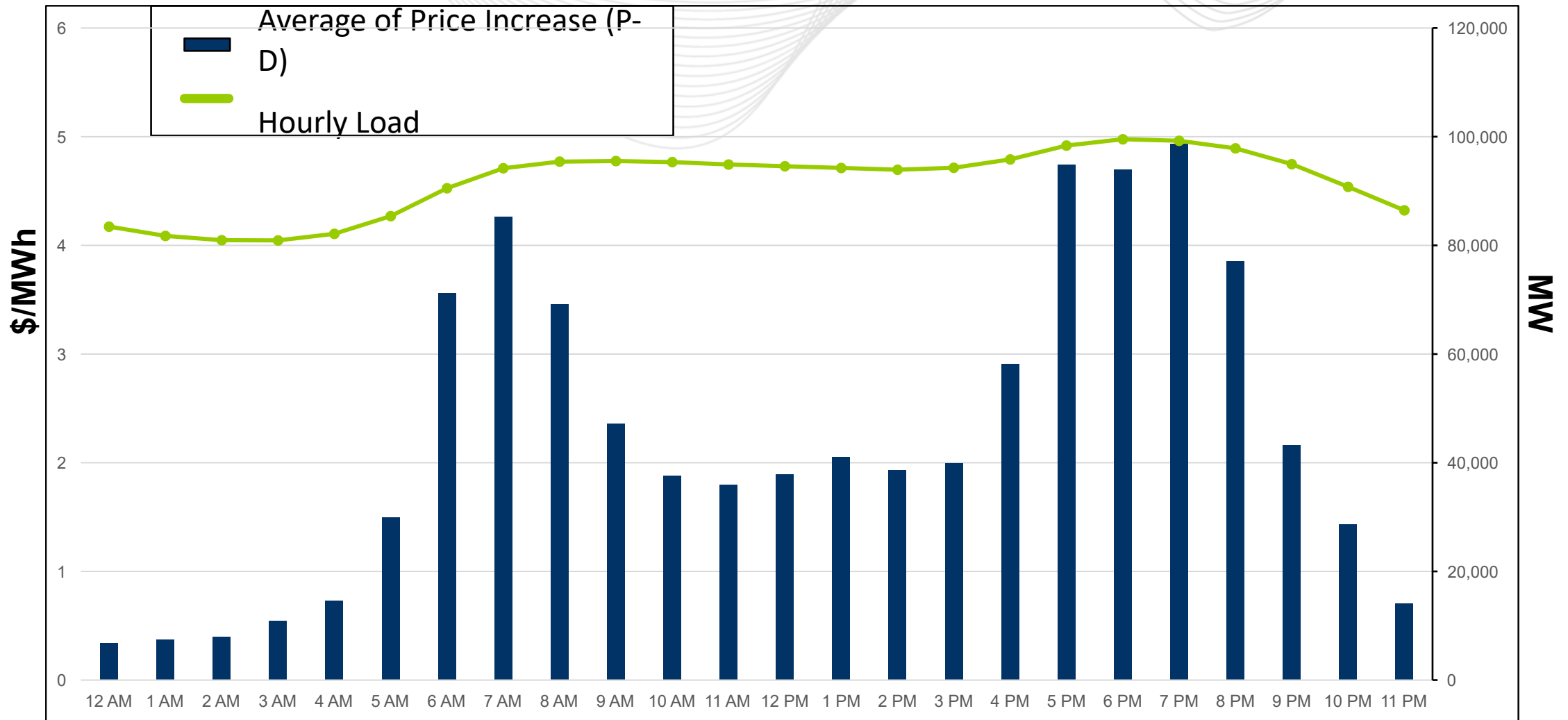


Fast-Start Daily Distribution: Sep, 2021 – Apr, 2022



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

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



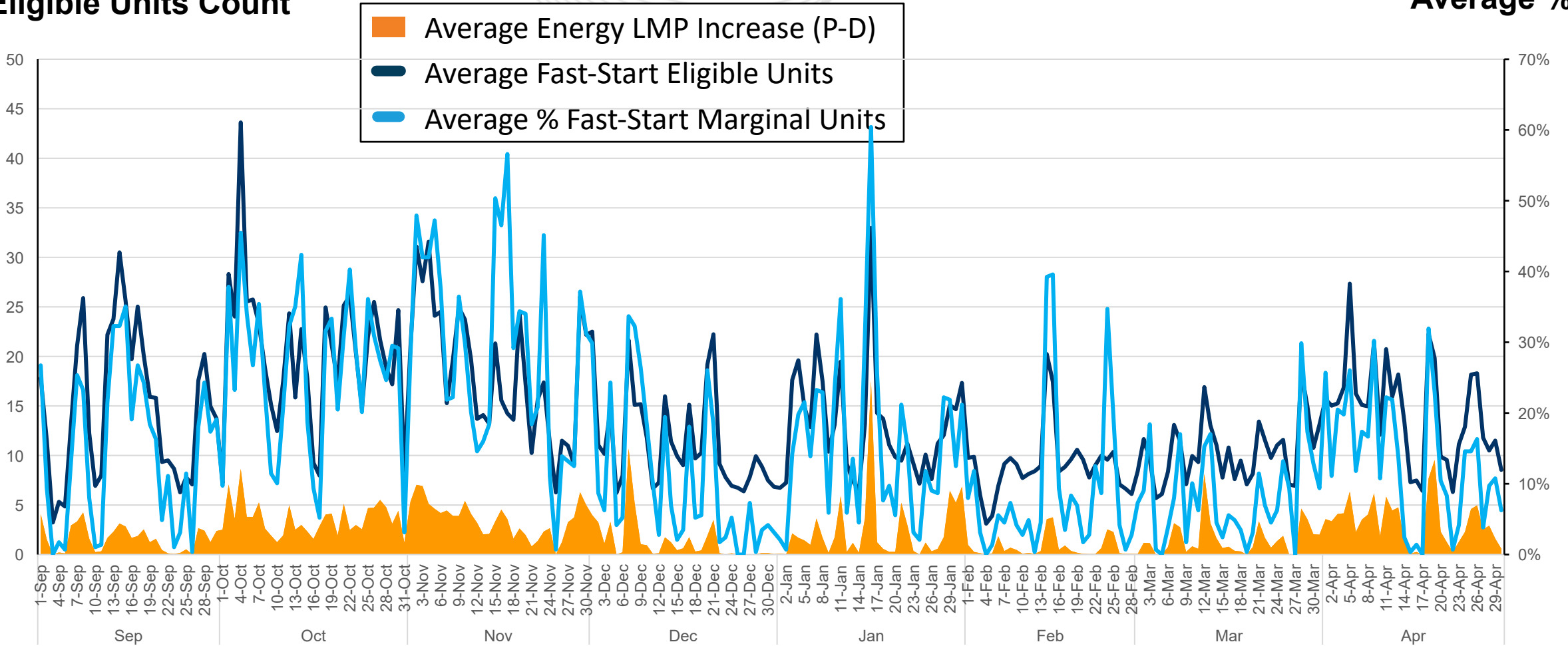
Key Takeaway: Largest impact on LMPs occur during on-peak hours.



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

FS Eligible Units Count

Average %



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

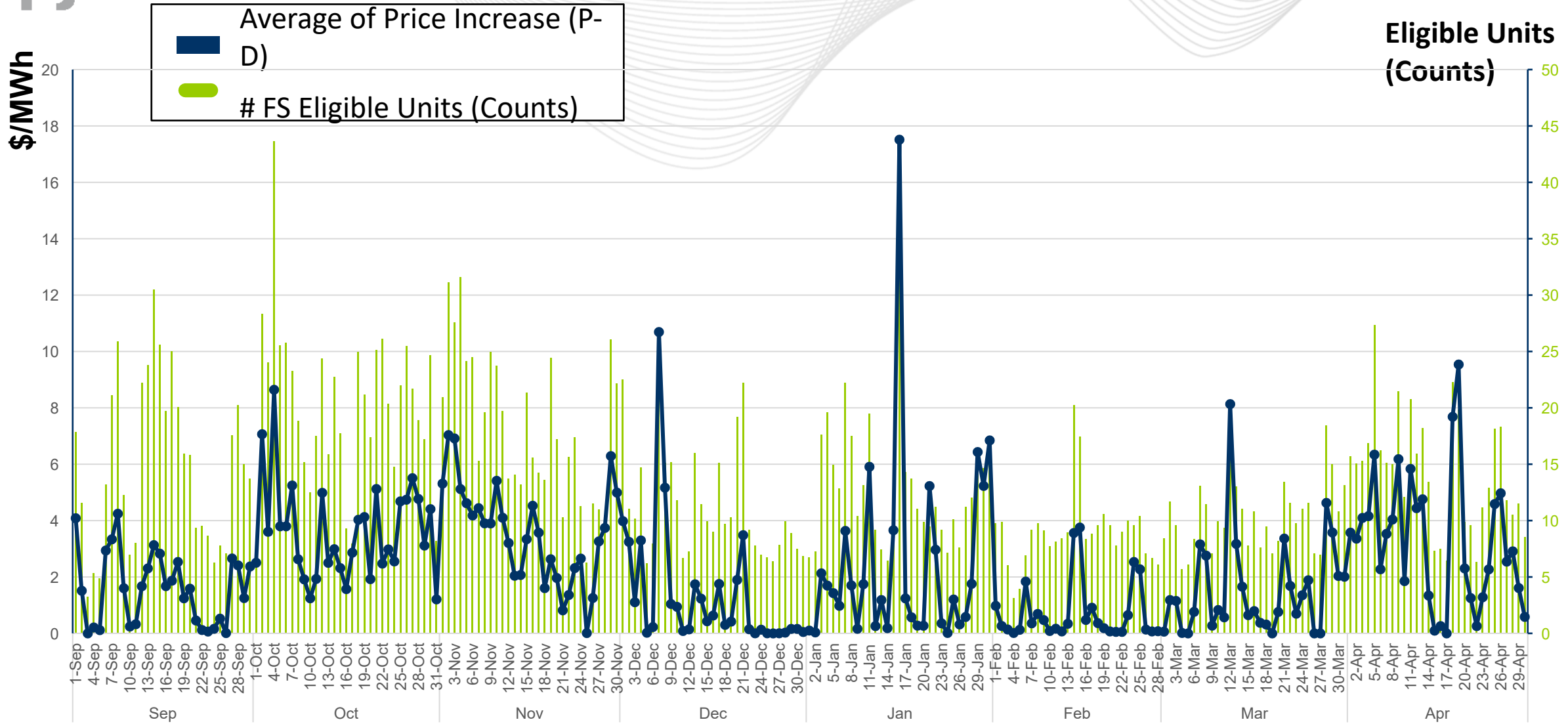


Fast-Start Eligible and Marginal Units: Sep, 2021 – Apr, 2022

	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%



Fast Start Eligible Units vs. Energy Price Increase



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

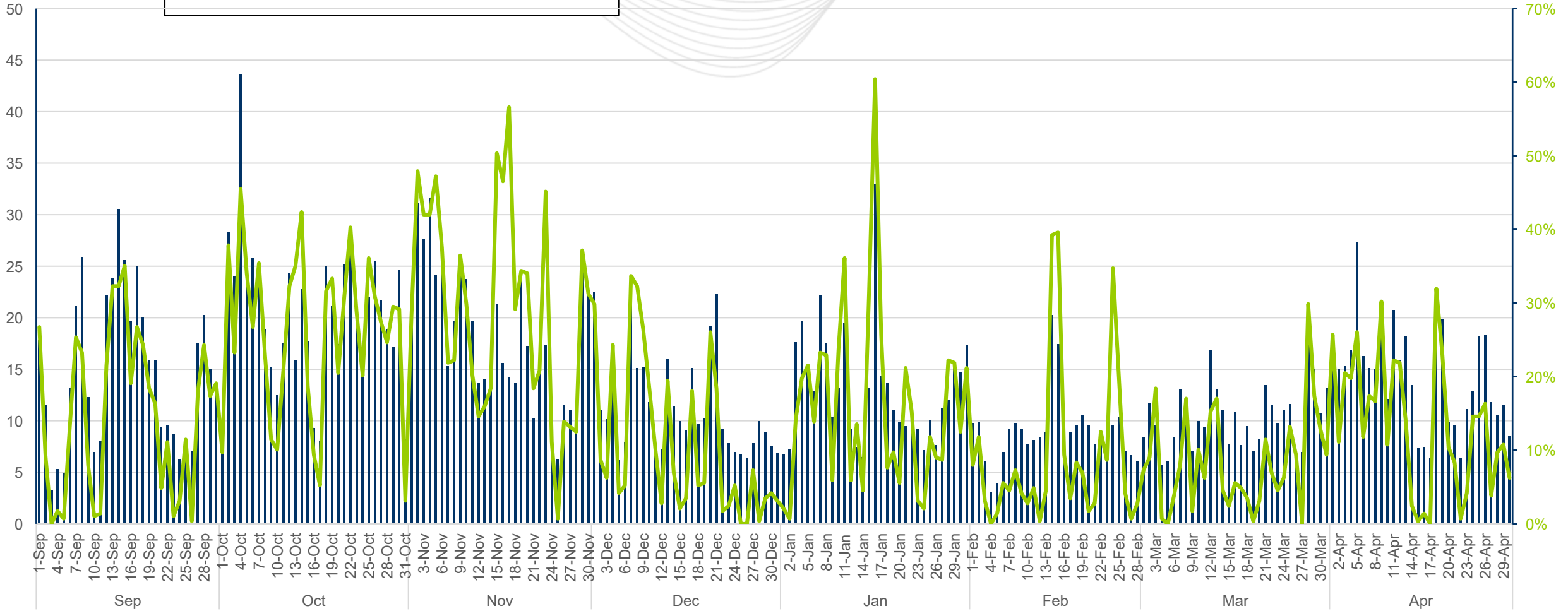


Fast Start Eligible Units vs. % Fast Start on Marginal

Eligible Units (Counts)

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

Average %



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

Facilitator:

Lisa Morelli, Lisa.Morelli@pjm.com

Secretary:

Nicholas DiSciullo, Nicholas.Disciullo@pjm.com

SME:

Zhenyu Fan, Zhenyu.Fan@pjm.com

Brian Chmielewski, Brian.Chmielewski@pjm.com

Fast Start Metrics Update



Member Hotline

(610) 666 – 8980

(866) 400 – 8980

custsvc@pjm.com