



# Briefing on western energy imbalance market

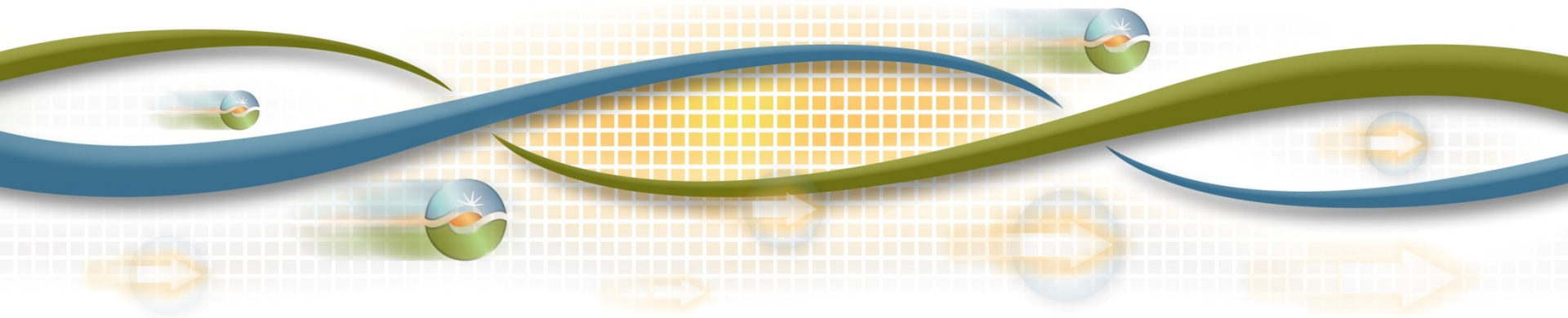
Mark Rothleder

Vice President, Market Quality and Renewable Integration

Board of Governors Meeting

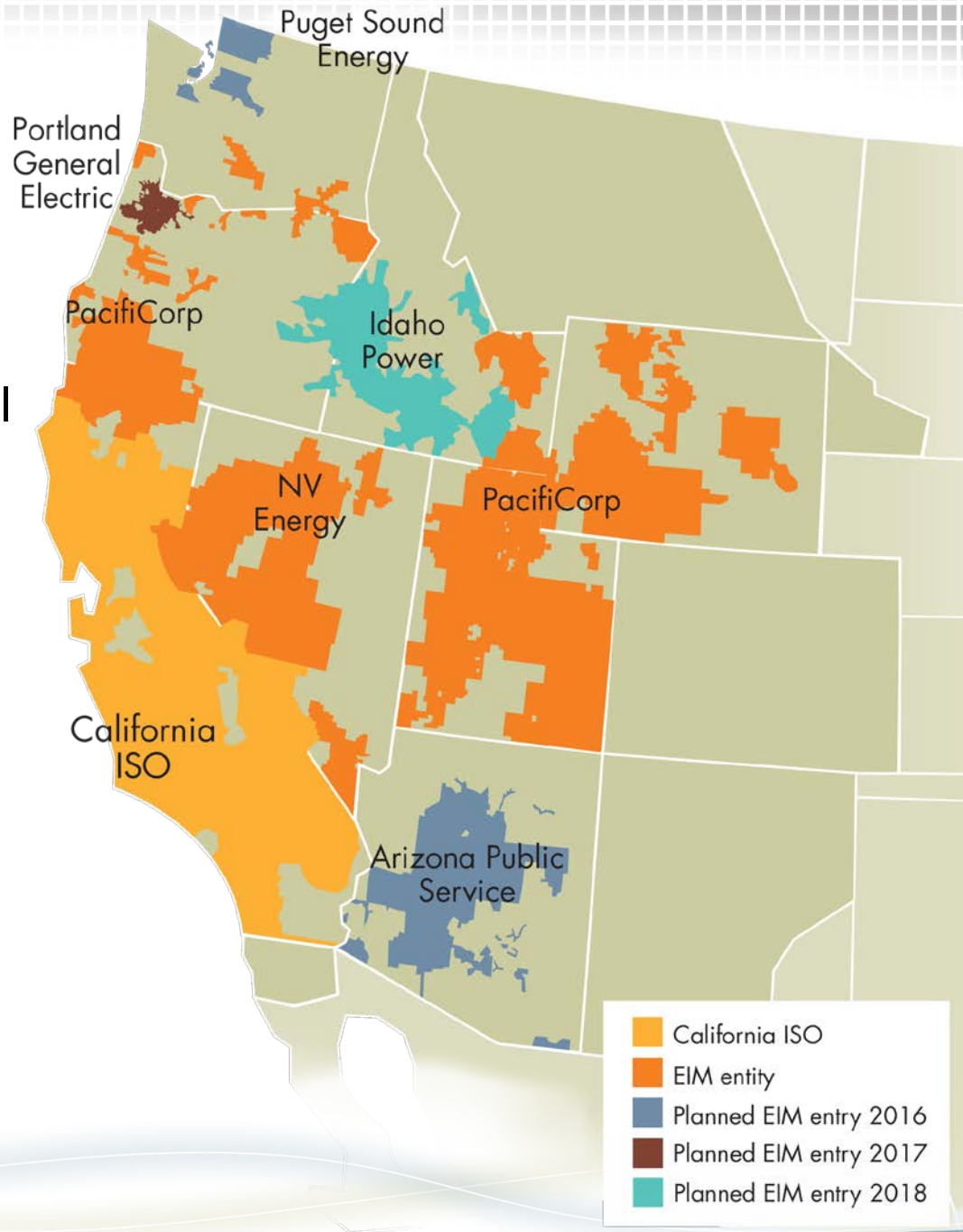
General Session

June 28, 2016



# EIM update

- Arizona and Puget continue their respective implementation progress:
  - August 1<sup>st</sup> begins parallel operations, teams begin preparing Readiness Criteria for FERC filing
  - October 1<sup>st</sup> Go-Live
- Idaho Power will join EIM in spring of 2018.
- LADWP has announced its intent to explore EIM participation.



# EIM benefits update

## 1<sup>st</sup> Quarter 2016 EIM Benefits

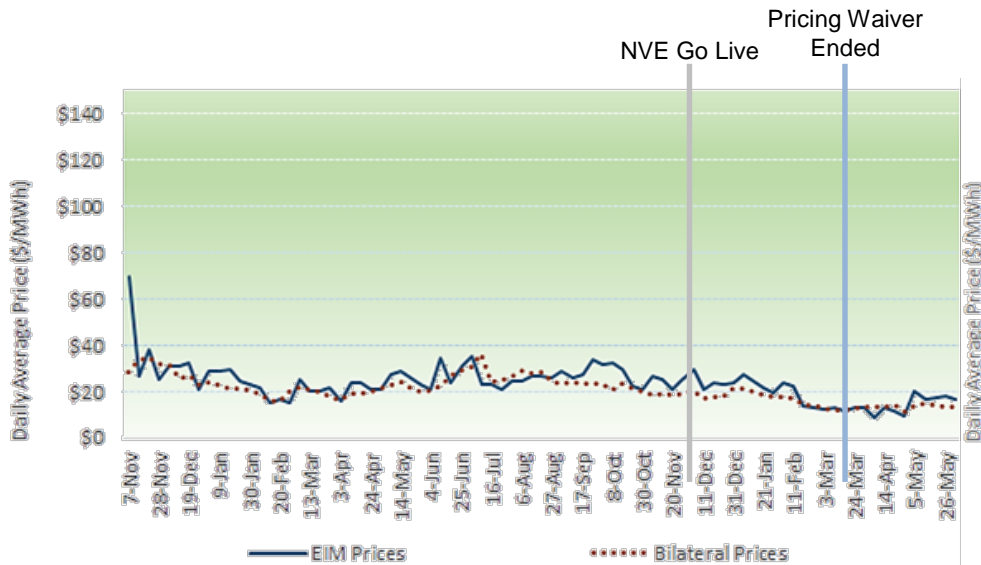
Region	January	February	March	Total
CAISO	1.97	1.19	3.18	6.35
NV Energy	0.34	0.75	0.62	1.70
PacifiCorp	2.21	4.95	3.69	10.85
Total	4.53	6.89	7.49	18.90

Shows the estimated gross benefits summary for the first quarter of 2016 in millions of dollars per EIM entity.

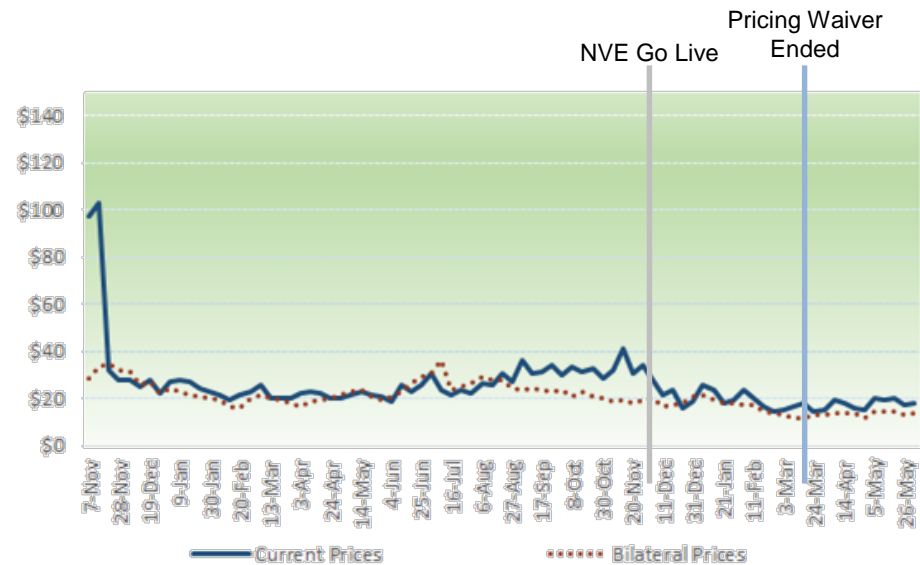
- Total EIM benefits since October 2014 = \$64.6M
- 112,948 Mwh curtailment avoided in Q1 2016, displacing 48,342 metric tons of CO2.

# 15-minute prices continue to be stable

## PACW



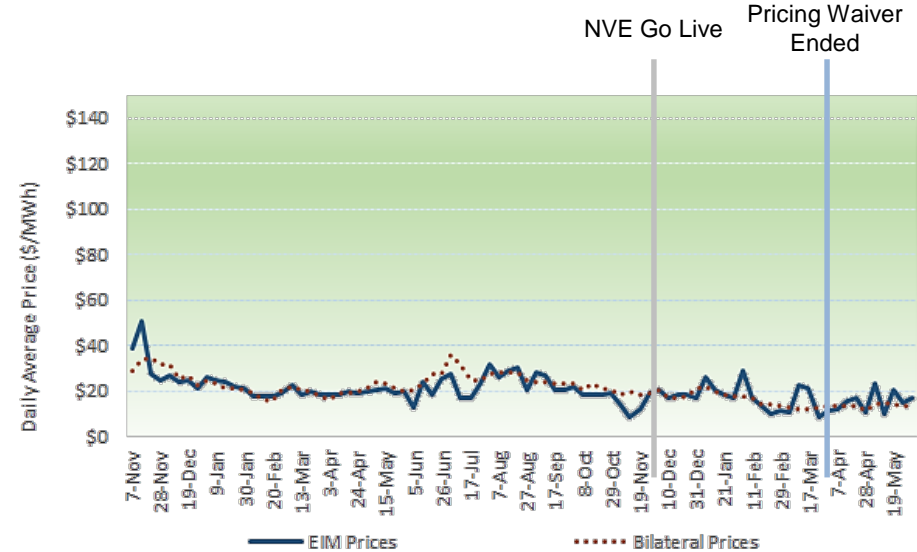
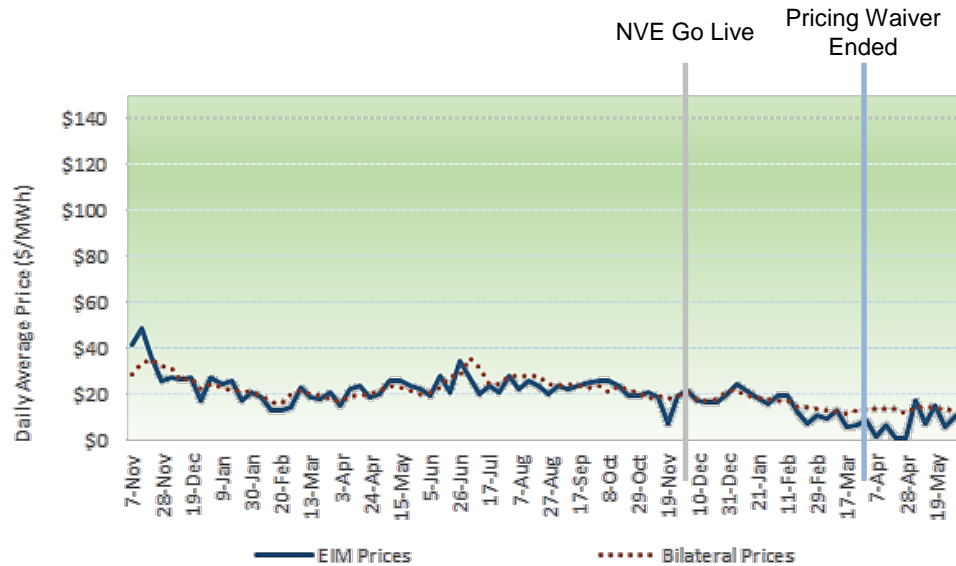
## PACE



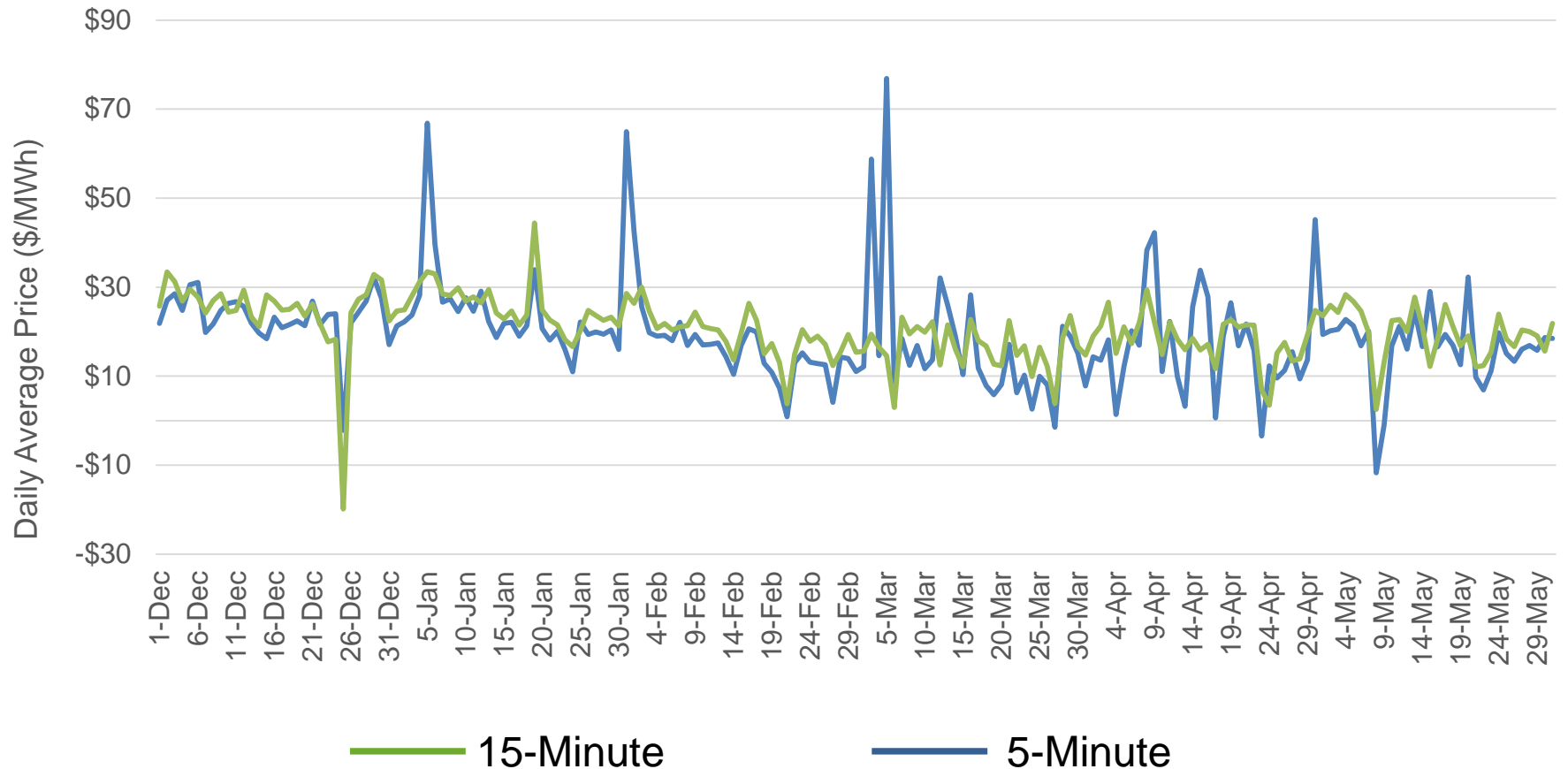
# Price discovery waiver ended March 23

## Five-Minute Prices in PAC West

## Five-Minute Prices in PAC East



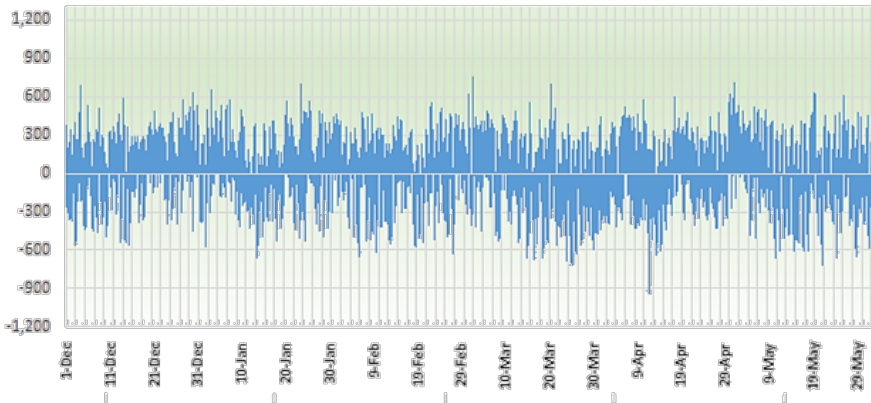
# Prices in NVE reflective of system conditions



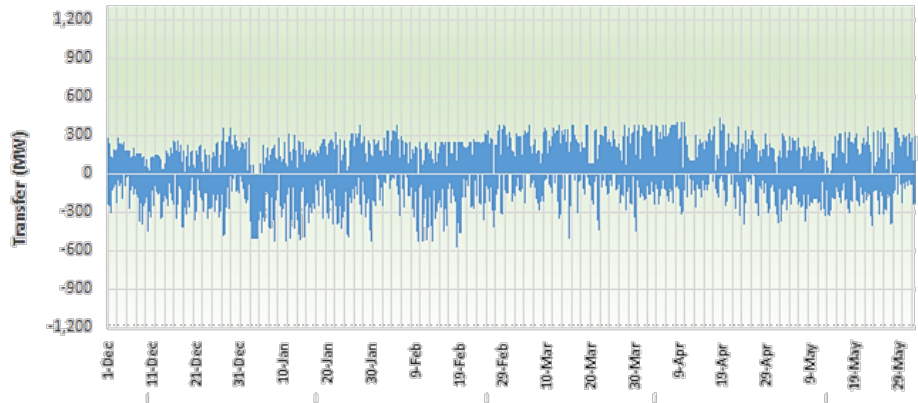


# Net Transfers by area

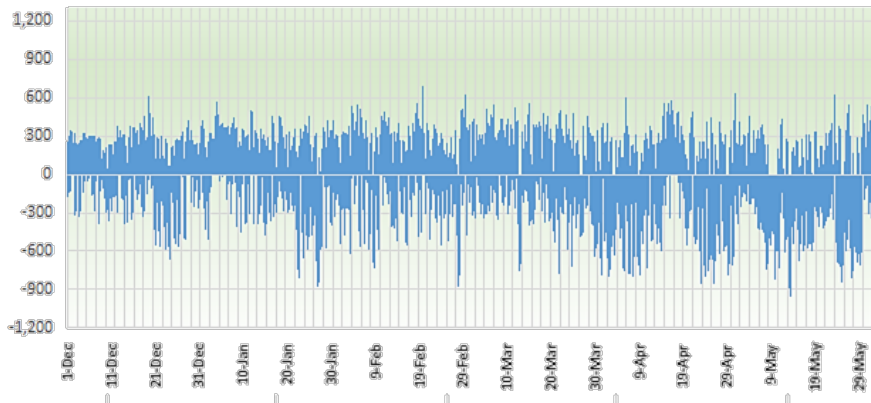
### Net Transfers from Nevada to other BAAs



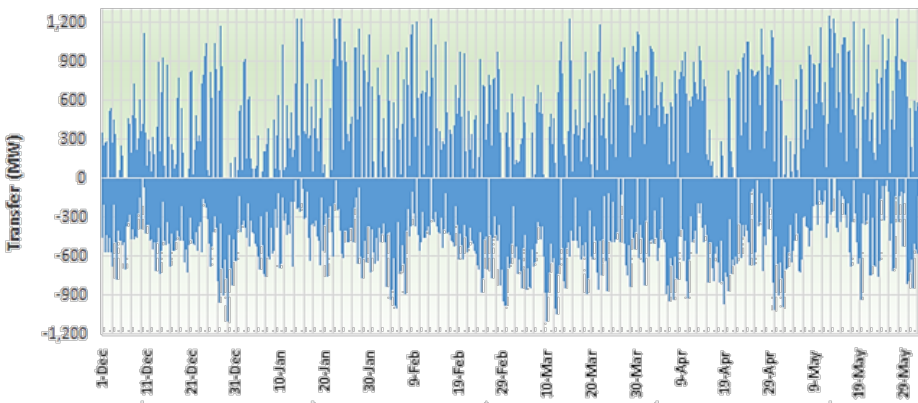
### Net Transfers from PAC West to other BAAs



### Net Transfers from PAC East to other BAAs



### Net Transfers from CAISO to other BAAs



# Transfer into ISO by supporting resource type

Month	Coal (%)	Gas (%)	Non-Emitting (%)	Total
15-May	0.00%	84.37%	15.63%	100%
15-Jun	0.00%	72.95%	27.05%	100%
15-Jul	0.00%	65.16%	34.84%	100%
15-Aug	0.02%	86.48%	13.50%	100%
15-Sep	0.00%	92.27%	7.73%	100%
15-Oct	0.10%	99.90%	0.00%	100%
15-Nov	0.00%	25.25%	74.75%	100%
15-Dec	0.00%	15.79%	84.21%	100%
16-Jan	0.00%	28.97%	71.03%	100%
16-Feb	0.00%	22.21%	77.79%	100%
16-Mar	0.00%	12.72%	87.28%	100%
16-Apr	0.00%	46.26%	53.74%	100%