

# WESTERN ENERGY IMBALANCE MARKET

## Briefing on western energy imbalance market and benefits

Mark Rothleder

Vice President, Market Quality & Renewable Integration

EIM Governing Body Meeting

General Session

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# EIM Update

- Idaho and Powerex successful start on April 4, 2018
  - Idaho has passed 97.2% of the balancing test, and 94.8% of the flex sufficiency test
  - Powerex is not subject to the balancing test and has passed 99.6% of the flex sufficiency test
  - Idaho has observed power balance undersupply infeasibilities in 0.01% and 0.3% of the intervals for the 15- and 5-minute markets, respectively
  - Powerex has observed no power balance undersupply infeasibilities in the 15- and 5-minute market
- SMUD/BANC implementation is on schedule for Spring 2019

# Gross economic benefits since start of EIM = \$330.52M

BAA	2014	2015	2016	2017	1st Qtr 2018	2018	Total
APS			5.98	34.56	5.90	5.90	46.44
CAISO	1.23	12.66	28.34	36.96	14.85	14.85	94.04
NVE		0.84	15.57	24.20	4.17	4.17	44.78
PAC	4.73	26.23	45.47	37.41	10.51	10.51	124.35
PGE				2.83	3.64	3.64	6.47
PSE			1.56	9.86	3.01	3.01	14.43
<b>Total</b>	<b>5.96</b>	<b>39.73</b>	<b>96.92</b>	<b>145.82</b>	<b>42.08</b>	<b>42.08</b>	<b>\$ 330.52</b>

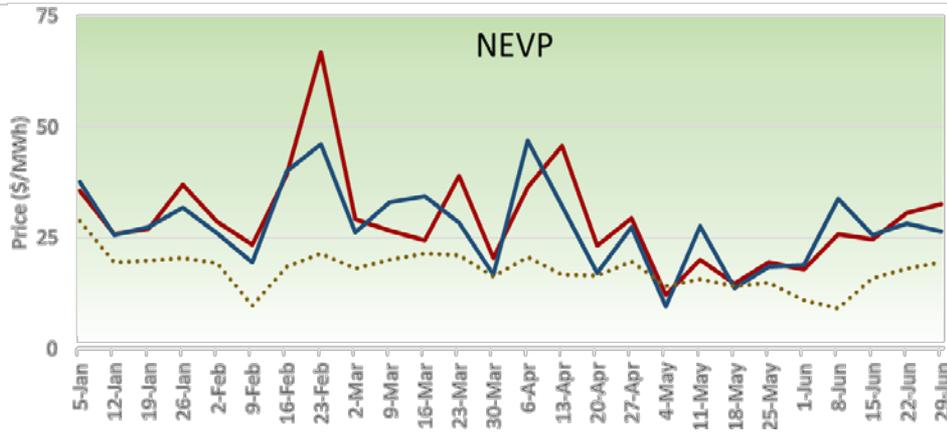
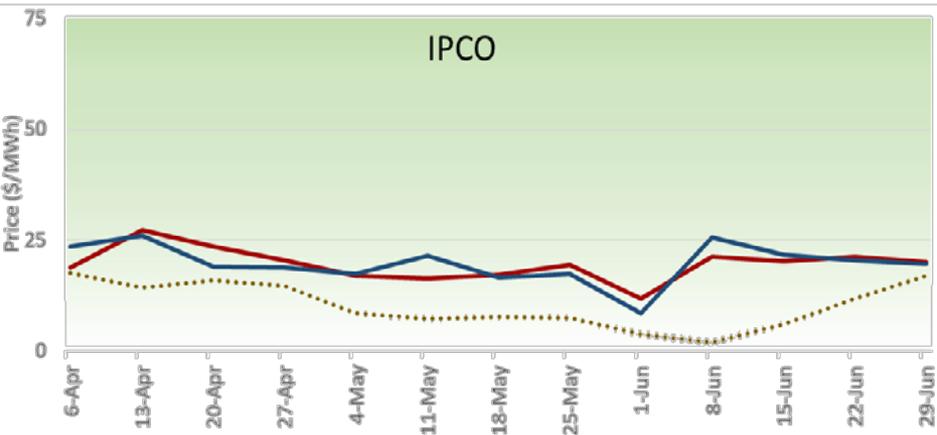
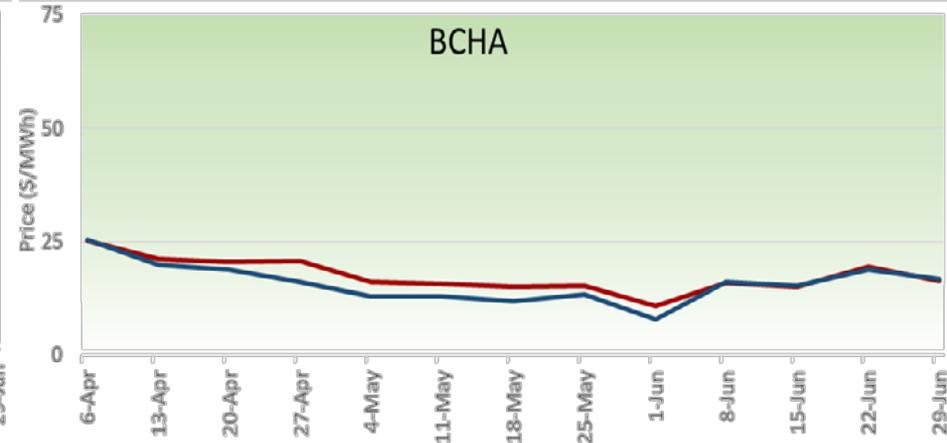
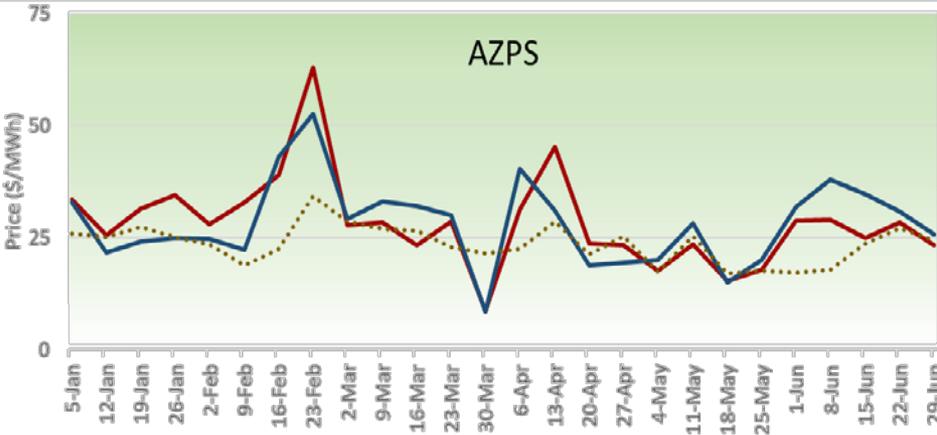
Region	January	February	March	Total
APS	\$1.98	\$1.84	\$2.08	\$5.90
ISO	\$2.99	\$5.74	\$6.12	\$14.85
NV Energy	\$0.87	\$2.07	\$1.23	\$4.17
PacifiCorp	\$2.36	\$4.00	\$4.15	\$10.51
PGE	\$0.95	\$1.21	\$1.48	\$3.64
PSE	\$1.01	\$1.00	\$1.00	\$3.01
<b>Total</b>	<b>\$10.16</b>	<b>\$15.86</b>	<b>\$16.06</b>	<b>\$42.08</b>

# Flexible ramping procurement diversity savings for 1st quarter, 2018

	January		February		March	
Direction	Up	Down	Up	Down	Up	Down
Average MW saving	387	490	426	530	492	542
Estimated savings	\$204,493	\$0	\$170,984	\$30,817	\$427,811	\$44,520
Sum of BAA requirements	1,109	1,157	1,177	1,241	1,374	1,368
Diversity Benefit	35%	42%	36%	43%	36%	40%

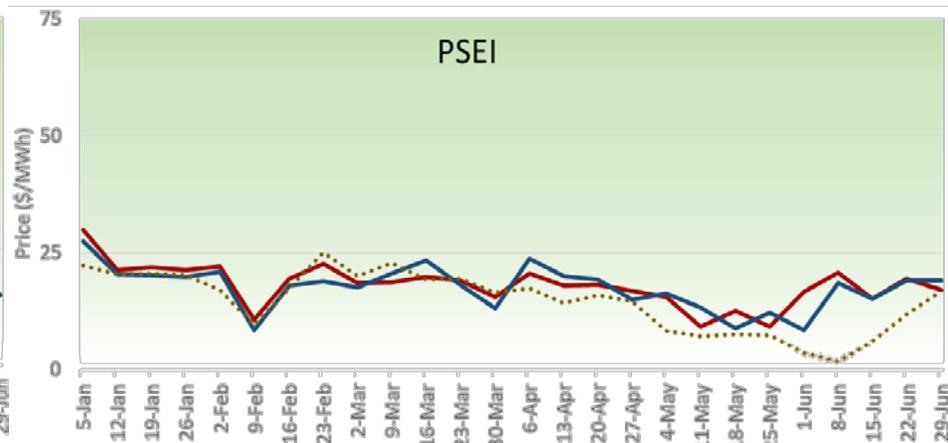
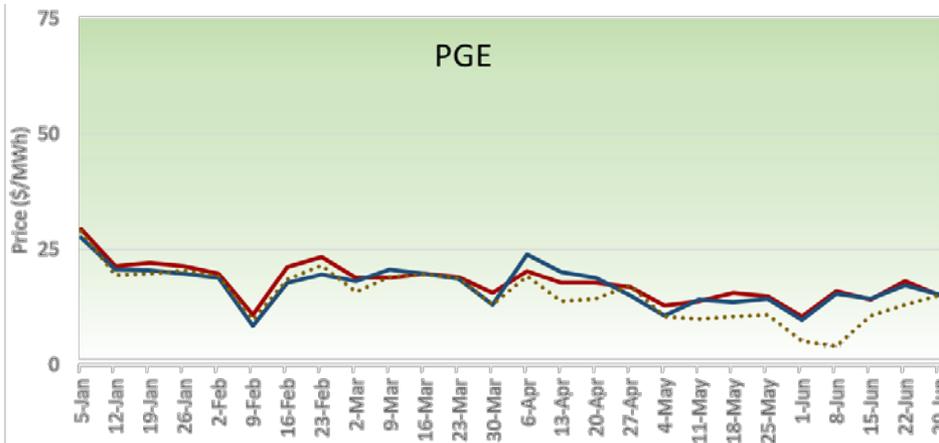
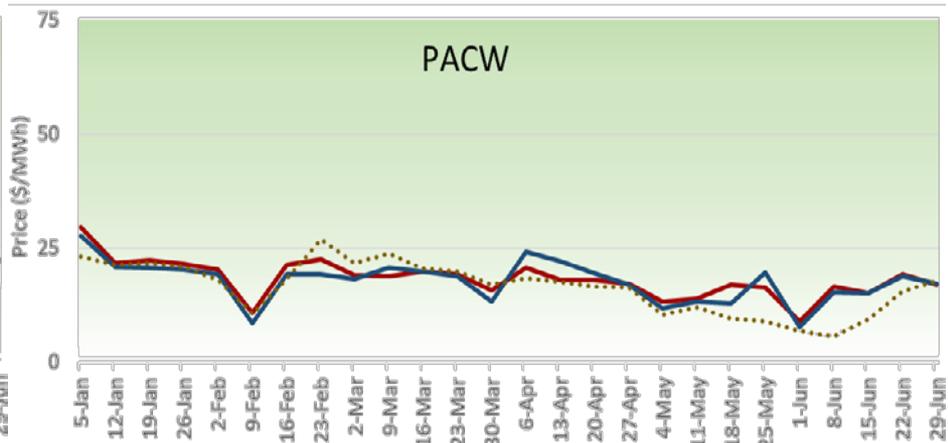
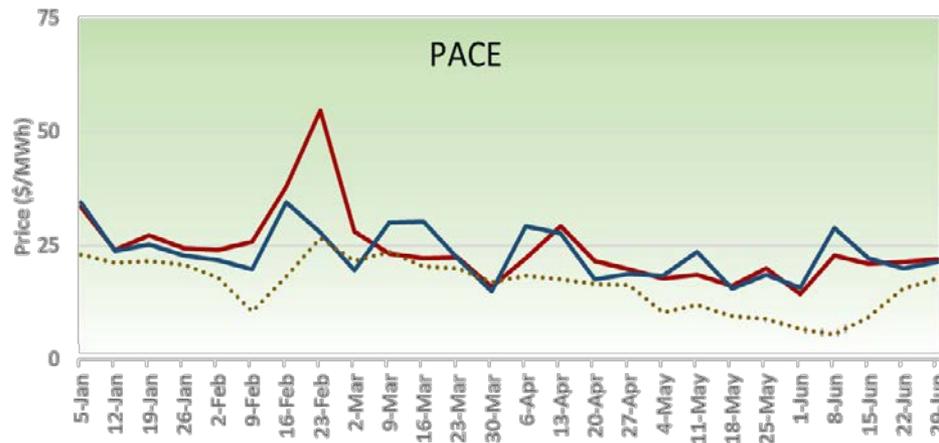
The percentage of savings is the average MW savings divided by the sum of the four individual BAA requirements.

# Weekly average prices in EIM areas



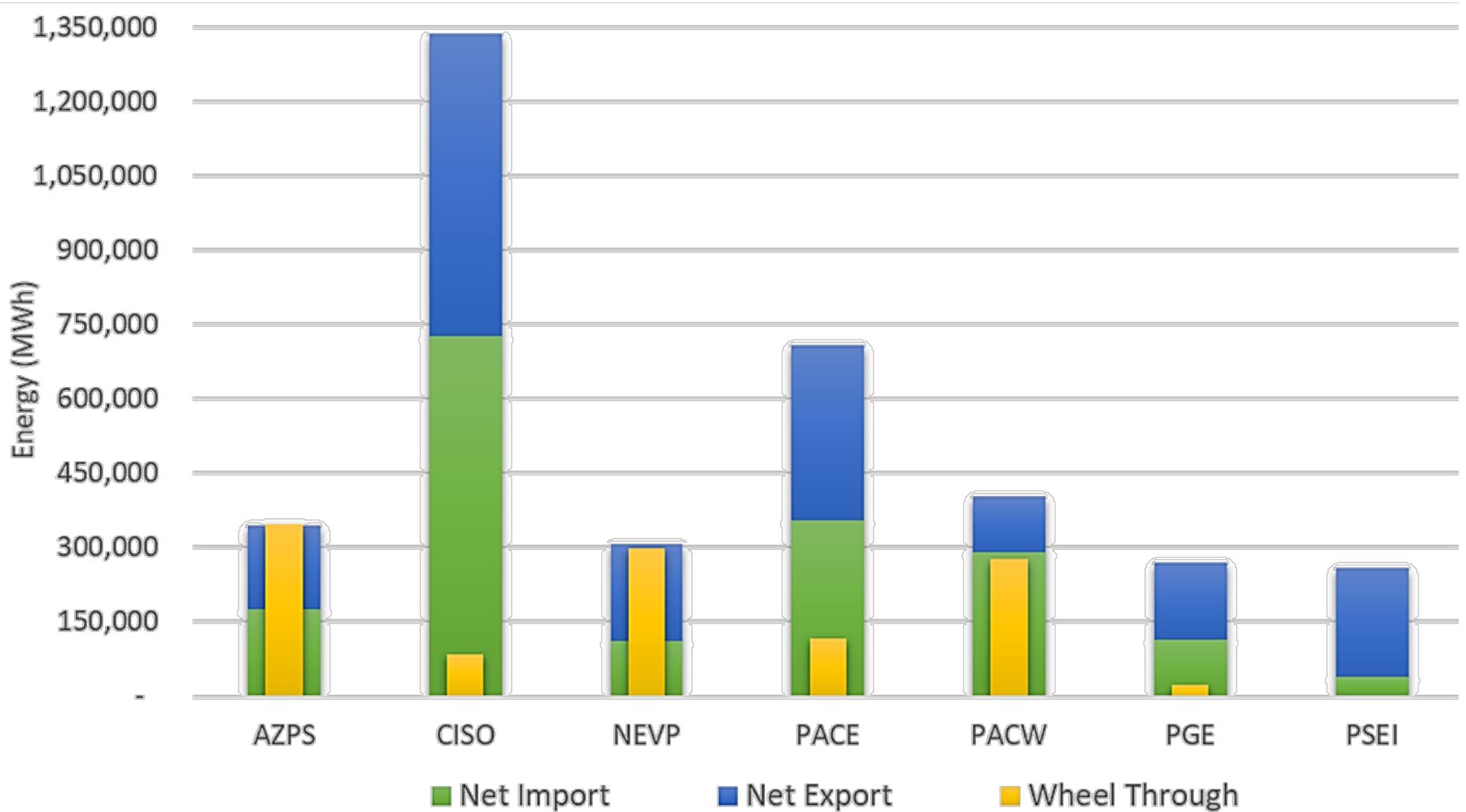
..... Estimated Proxy    — RTD ELAP    — FMM ELAP

# Weekly average prices in EIM areas



..... Estimated Proxy    — RTD ELAP    — FMM ELAP

# Estimated wheel through transfers in Q1, 2018



# Robust energy transfers in 1<sup>st</sup> quarter, 2018

