

# WESTERN ENERGY IMBALANCE MARKET

## Briefing on western energy imbalance market and benefits

Mark Rothleder

Vice President, Market Quality & Renewable Integration

EIM Governing Body

General Session

November 29, 2017

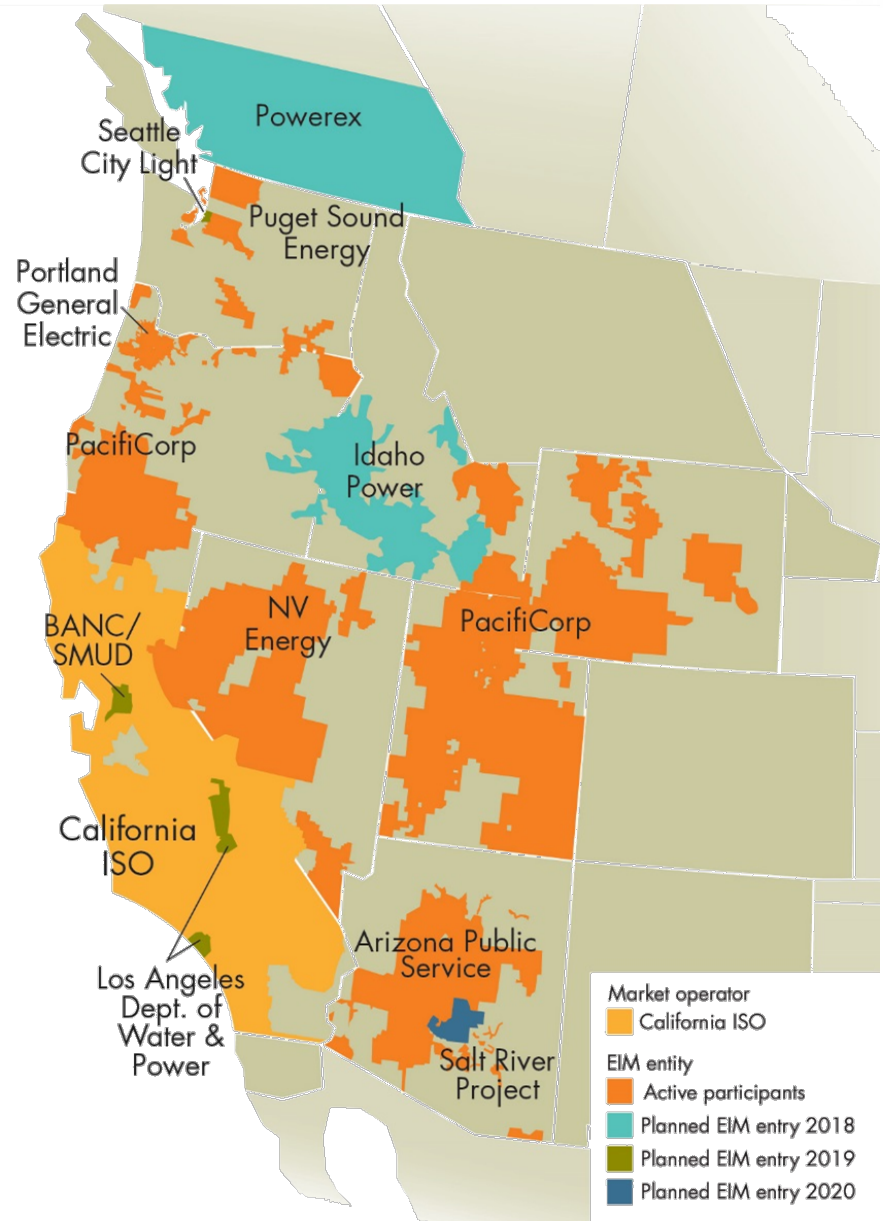


# The western energy imbalance market continues to grow

There are currently six entities in the implementation phase:

- Spring 2018
  - ~ Idaho Power
  - ~ Powerex
- Spring 2019
  - ~ Seattle City Light
  - ~ BANC/SMUD
  - ~ LADWP
- Spring 2020
  - ~ Salt River Project

In addition to Puget Sound Energy, MBR (market based rate) authority has been applied for and received by PacifiCorp, Portland General and NV Energy.

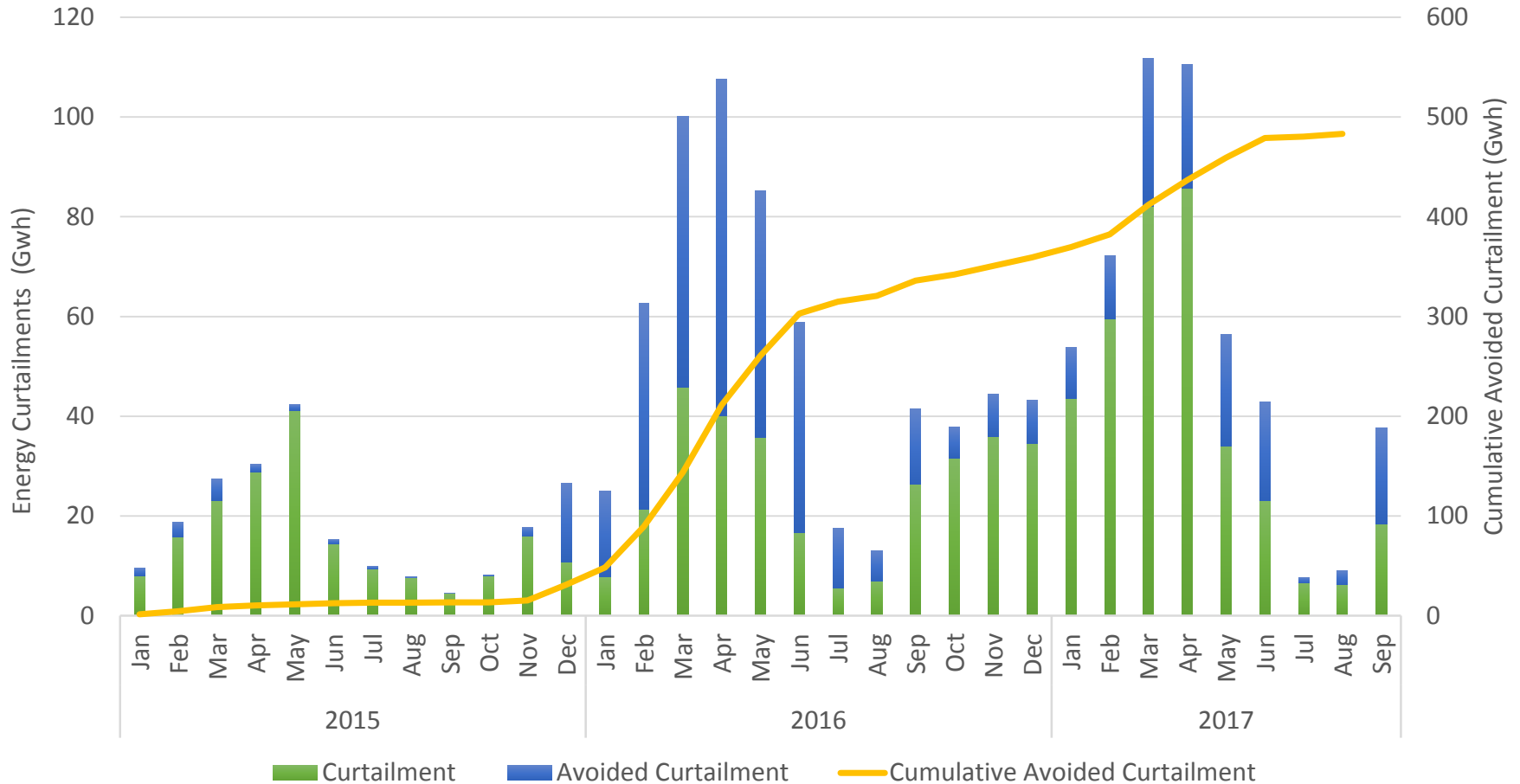


# Gross economic benefits since start of EIM = \$254.98M

BAA	2014	2015	2016	1 <sup>st</sup> Qtr 2017	2 <sup>nd</sup> Qtr 2017	3 <sup>rd</sup> Qtr 2017	YTD 2017	Total
APS			5.98	5.23	8.25	11.08	24.56	30.54
CAISO	1.23	12.66	28.34	9.5	15.31	7.63	32.44	74.67
NVE		0.84	15.57	3.5	5.70	8.55	17.75	34.16
PAC	4.73	26.23	45.47	11.47	8.80	10.31	30.58	107.01
PSE			1.56	1.4	2.65	2.98	7.03	8.59
<b>Total</b>	<b>5.96</b>	<b>39.73</b>	<b>96.92</b>	<b>31.1</b>	<b>40.71</b>	<b>40.55</b>	<b>112.36</b>	<b>254.98</b>

BAA	July	August	September	Q3 – 2017 Total
APS	2.52	4.92	3.64	11.08
CAISO	2.01	4.59	1.03	7.63
NVE	2.28	3.41	2.86	8.55
PAC	2.79	4.52	3.00	10.31
PSE	0.97	1.13	0.88	2.98
<b>Total</b>	<b>10.57</b>	<b>18.57</b>	<b>11.41</b>	<b>40.55</b>

# Energy imbalance market helps avoid curtailment



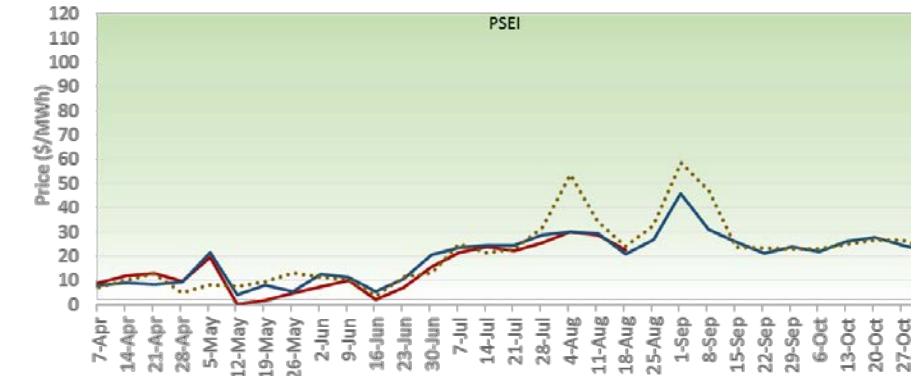
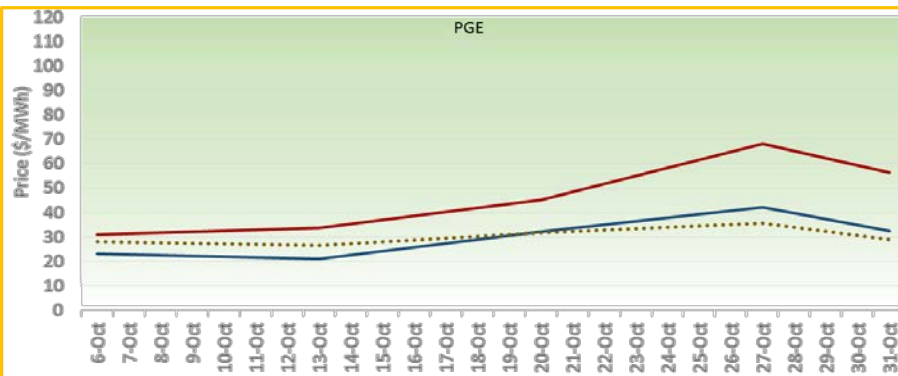
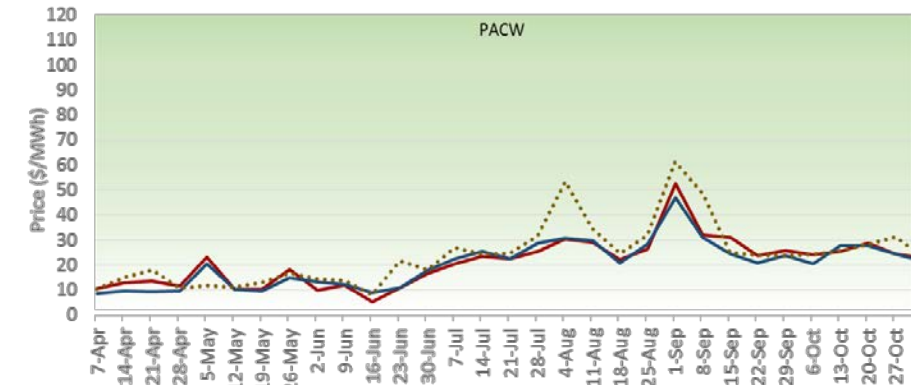
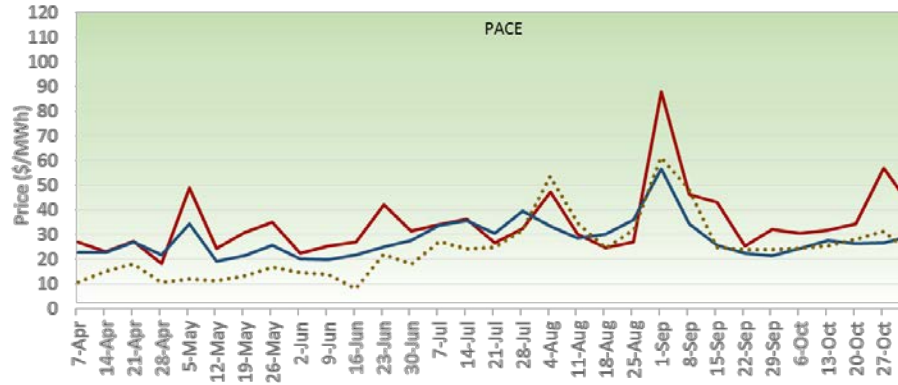
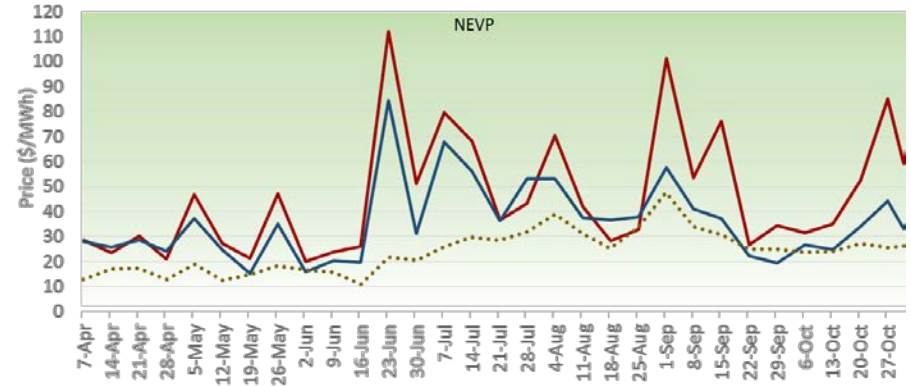
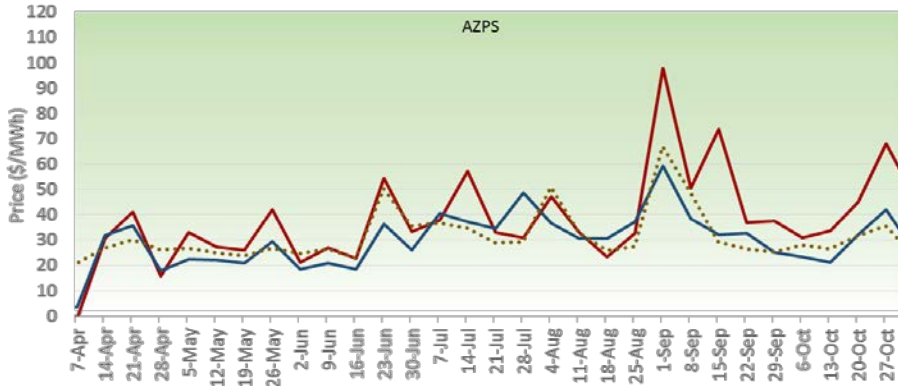
Estimated metric tons of CO2 displaced to date = 214,927

# Flexible ramping procurement diversity savings for 3<sup>rd</sup> quarter, 2017

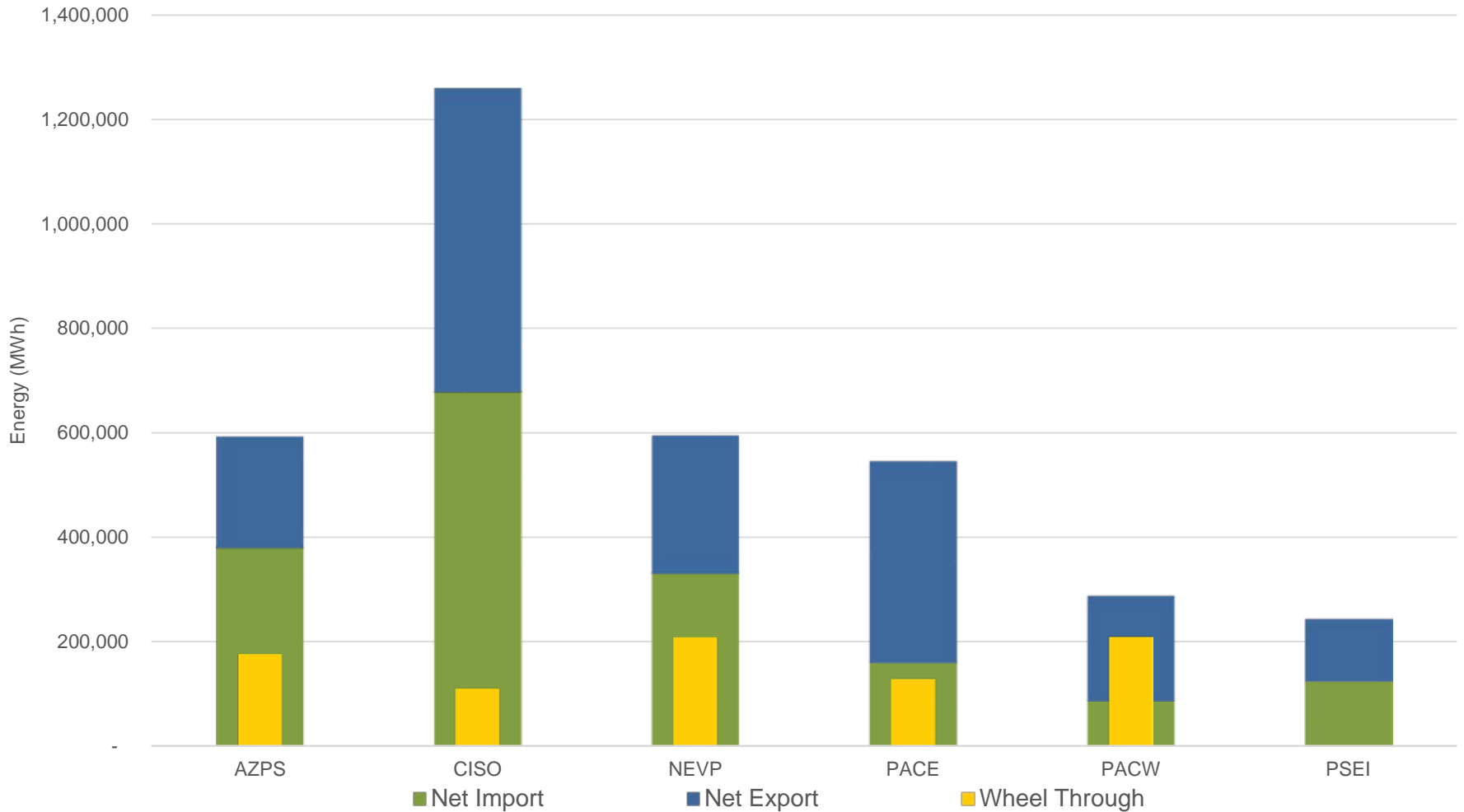
	July		August		September	
Direction	Up	Down	Up	Down	Up	Down
Average MW saving	452	487	452	495	425	507
Sum of BAA requirements	1,236	1,232	1,246	1,247	1,274	1,259
<b>Diversity Benefit</b>	<b>37%</b>	<b>40%</b>	<b>36%</b>	<b>40%</b>	<b>33%</b>	<b>40%</b>

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 wheel through transfers in Q3, 2017



# Robust energy transfers observed in 3<sup>rd</sup> quarter

