

# WESTERN ENERGY IMBALANCE MARKET

## Briefing on western energy imbalance market

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EIM Governing Body Meeting

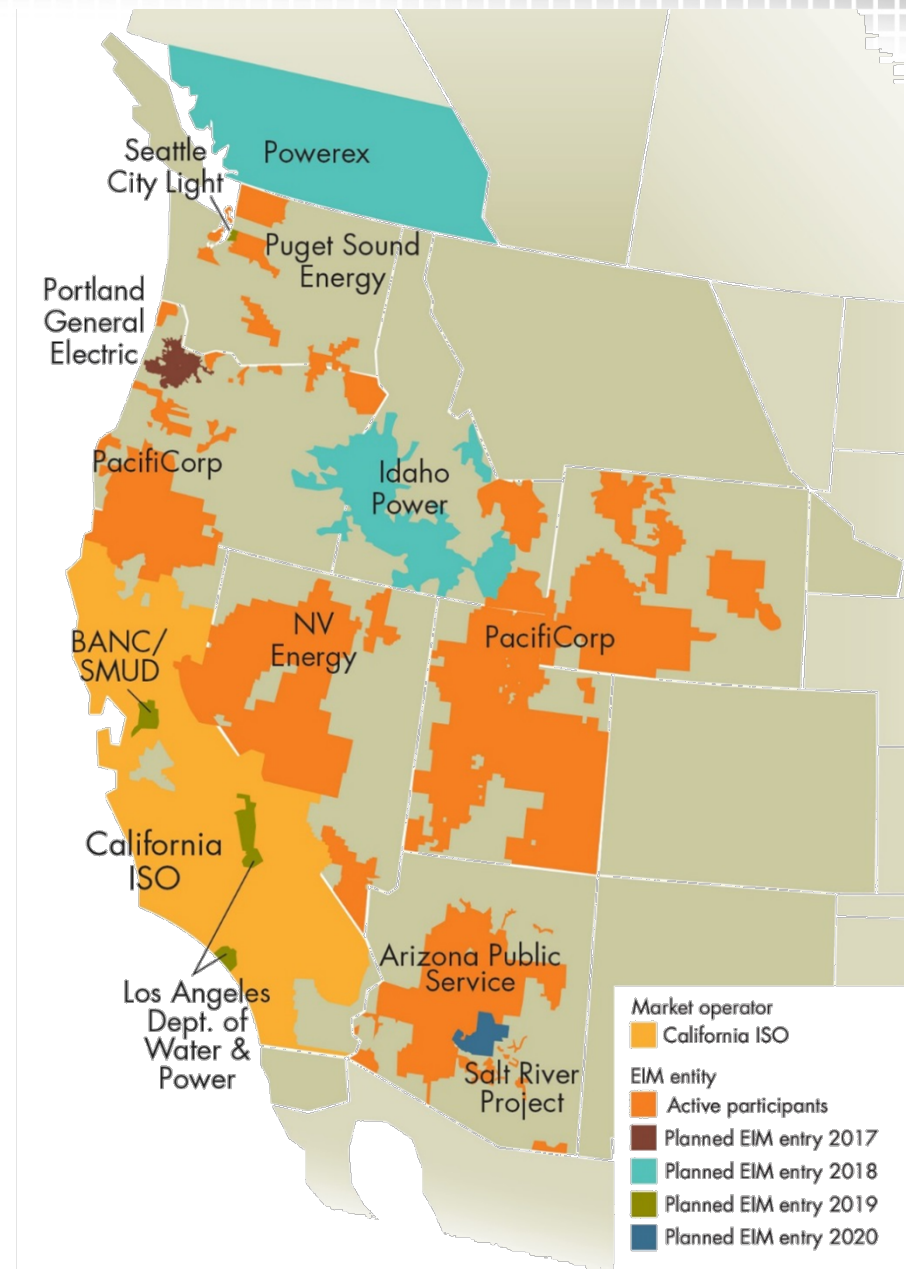
General Session

July 13, 2017



# Implementation update

- Powerex to join EIM in spring of 2018
- LADWP to join EIM in spring of 2019
- Entities exploring future entry
  - ❖ CENACE, Baja California, Mexico
  - ❖ Northwestern Energy

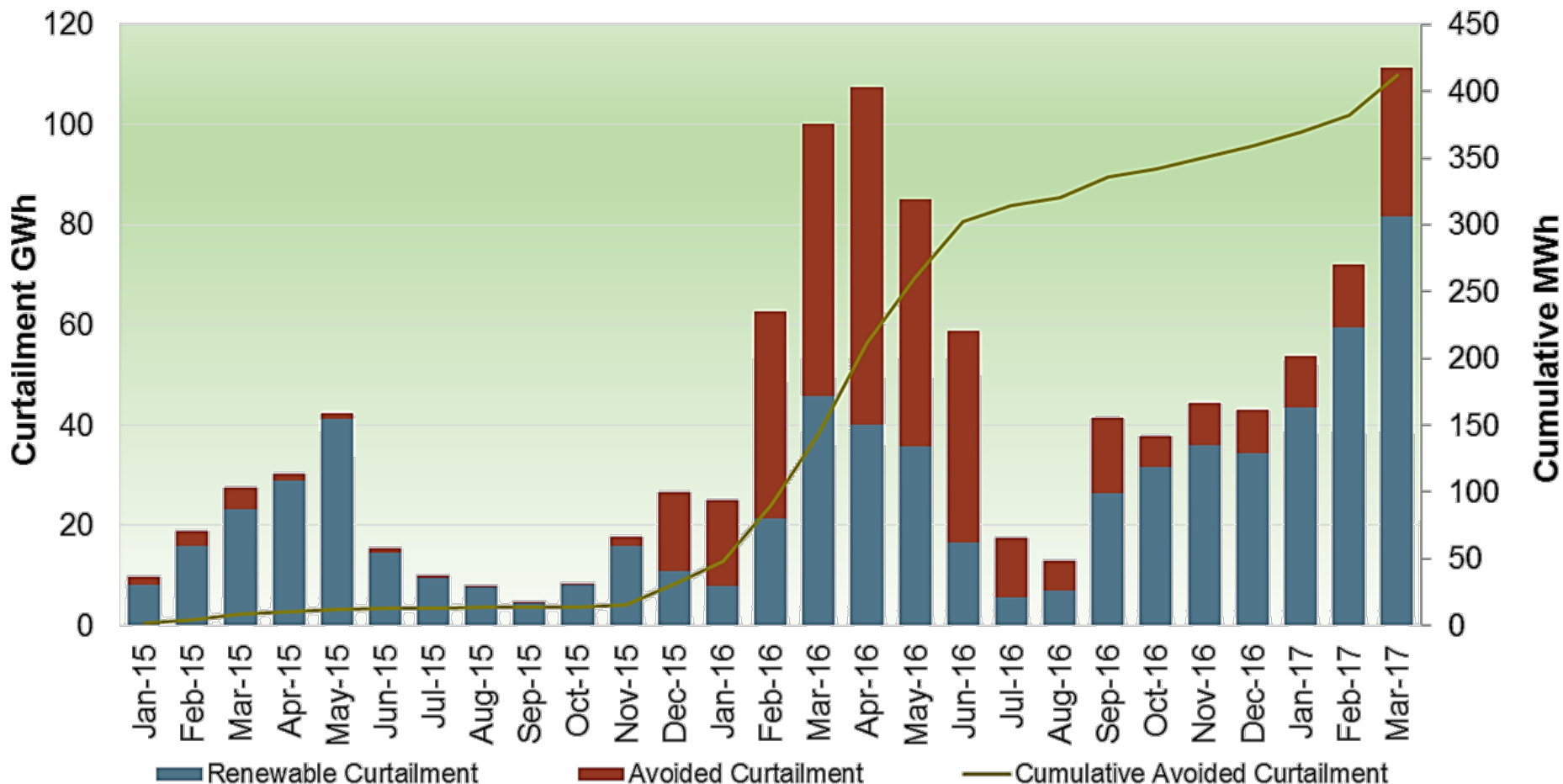


# Gross economic benefits since start of EIM = \$173.72M

BAA	4 <sup>th</sup> Qtr 2014	1 <sup>st</sup> Qtr 2015	2 <sup>nd</sup> Qtr 2015	3 <sup>rd</sup> Qtr 2015	4 <sup>th</sup> Qtr 2015	1 <sup>st</sup> Qtr 2016	2 <sup>nd</sup> Qtr 2016	3 <sup>rd</sup> Qtr 2016	4 <sup>th</sup> Qtr 2016	1 <sup>st</sup> Qtr 2017	Total
<b>APS</b>									5.98	5.23	11.21
<b>CAISO</b>	1.23	1.44	2.46	3.48	5.28	6.35	7.89	5.44	8.67	9.50	51.74
<b>NVE</b>	-	-	-	-	0.84	1.70	5.20	5.60	3.07	3.50	19.91
<b>PAC</b>	4.73	3.82	7.72	8.52	6.17	10.85	10.51	15.12	8.99	11.47	87.90
<b>PSE</b>									1.56	1.40	2.96
<b>Total</b>	5.96	5.26	10.18	12.00	12.29	18.90	23.60	26.16	28.27	31.10	<b>173.72</b>

BAA	January	February	March	Q1 – 2017 Total
<b>APS</b>	1.71	1.71	1.81	5.23
<b>CAISO</b>	2.15	3.17	4.18	9.5
<b>NVE</b>	1.07	1.31	1.12	3.5
<b>PAC</b>	2.74	3.84	4.89	11.47
<b>PSE</b>	0.41	0.41	0.58	1.4
<b>Total</b>	8.08	10.44	12.58	31.1

# Energy imbalance market helps avoid curtailment



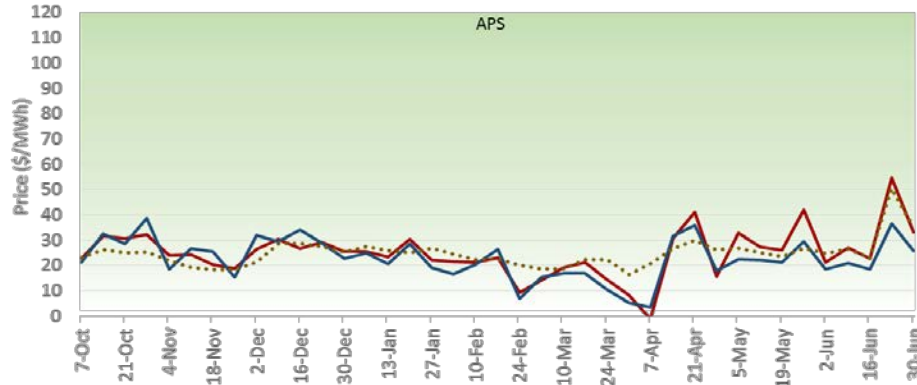
Year-to-date estimated metric tons of CO2 displaced = 176,241

# Flexible ramping procurement diversity savings for 1<sup>st</sup> quarter, 2017

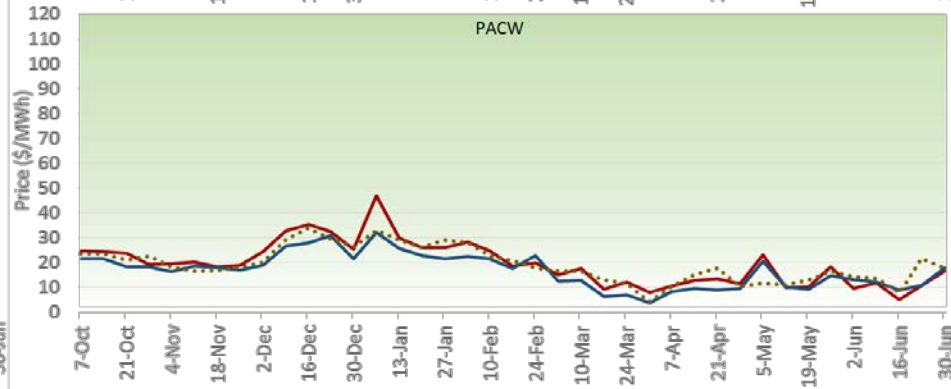
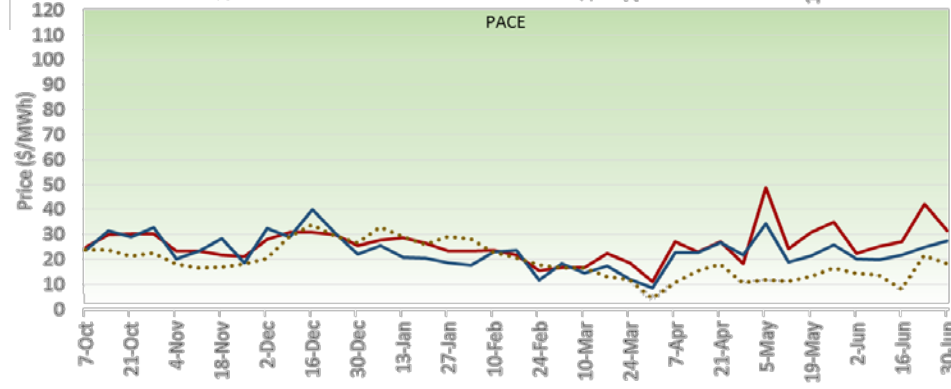
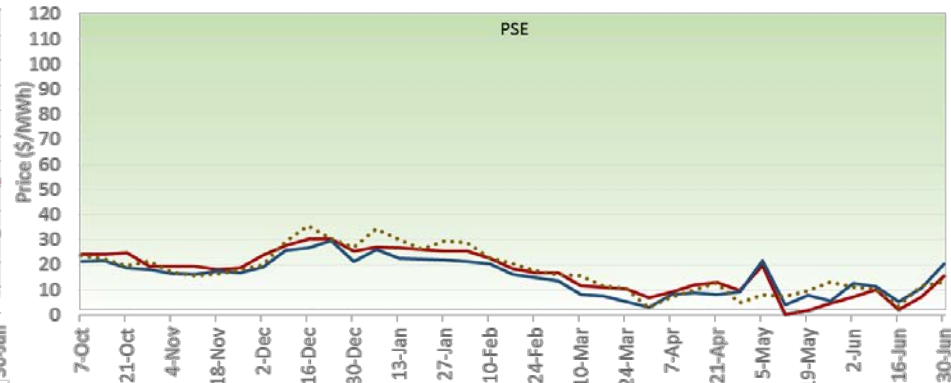
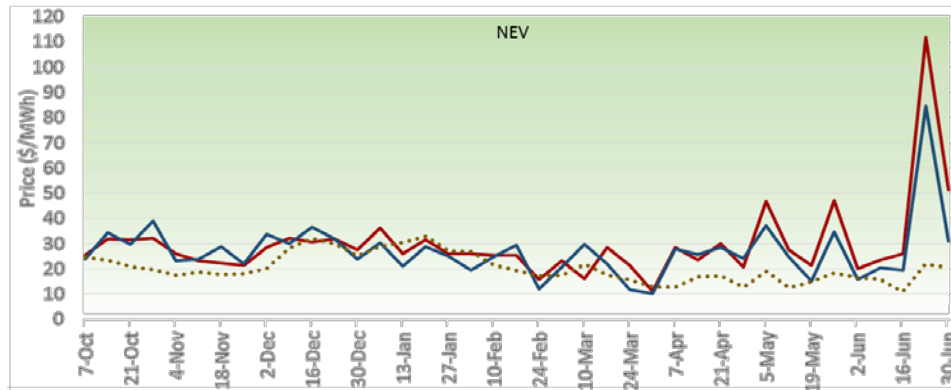
	January		February		March	
Direction	Up	Down	Up	Down	Up	Down
Average MW saving	377	474	379	486	399	488
Sum of BAA requirements	1,205	1,165	1,191	1,192	1,181	1,245
<b>Diversity Benefit</b>	<b>31%</b>	<b>41%</b>	<b>32%</b>	<b>41%</b>	<b>34%</b>	<b>39%</b>

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

# Daily average prices in EIM areas



- FMM ELAP
- RTD ELAP
- ... Estimated Proxy



# Energy transfer capability in 2<sup>nd</sup> Quarter, 2017

