WESTERN ENERGY IMBALANCE MARKET

Western energy imbalance market update

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EIM Body of State Regulators October 16, 2017



Implementation update

Portland General Electric went live on October 1st.

Entities now in implementation phase:

- ~ Idaho Power Spring 2018
- ~ Powerex Spring 2018
- BANC/SMUD & Seattle City Light Spring 2019
- Los Angeles Department of Water & Power (LADWP) – Spring 2019
- ~ Salt River Project Spring 2020

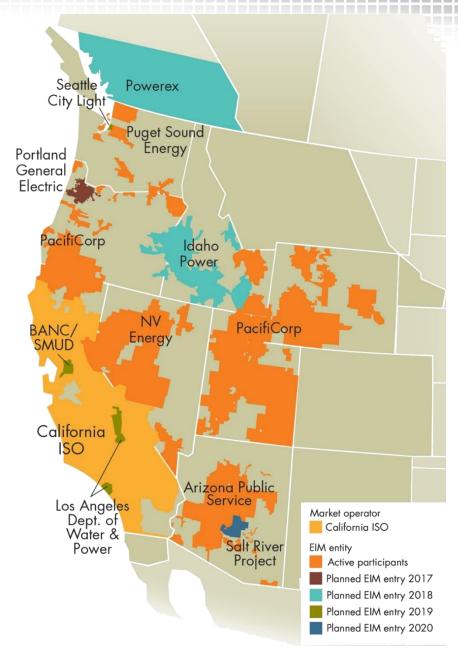
Entities exploring future entry:

~ CENACE, Baja California, Mexico

📀 California ISO

~ Northwestern Energy

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Gross economic benefits since start of EIM = \$213.24M

BAA	2014	2015	1st Qtr 2016	2nd Qtr 2016	3rd Qtr 2016	4th Qtr 2016	1st Qtr 2017	2nd Qtr 2017	Total
APS						5.98	5.23	8.13	19.34
CAISO	1.23	12.66	6.35	7.89	5.44	8.67	9.5	15.49	67.23
NVE		0.84	1.7	5.2	5.6	3.07	3.5	4.62	24.53
PAC	4.73	26.23	10.85	10.51	15.12	8.99	11.47	8.81	96.71
PSE						1.56	1.4	2.47	5.43
Total	5.96	39.73	18.9	23.6	26.16	28.27	31.1	39.52	213.24

ВАА	April	Мау	June	Q2 – 2017 Total				
APS	2.87	2.54	2.72	8.13				
CAISO	3.42	5.23	6.84	15.49				
NVE	2.37	2.25	*	4.62				
PAC	3.94	2.97	1.90	8.81				
PSE	1.13	0.72	0.62	2.47				
Total	13.73	13.71	12.08	39.52				

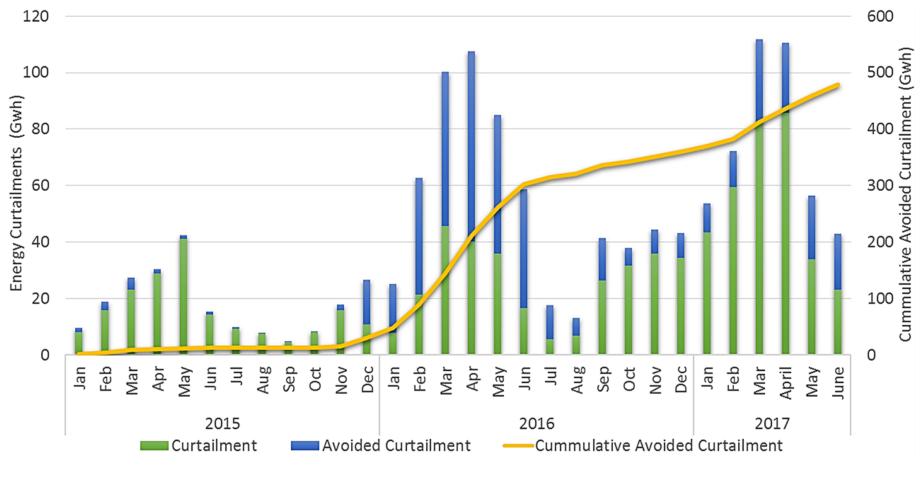
*Due to special circumstances, the benefits for NV Energy for June were not included in the Q2 report. The Q2 report will be republished, inclusive of these numbers, at the time the Q3 report is published (end of October).

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ISO Public

Energy imbalance market helps avoid curtailment

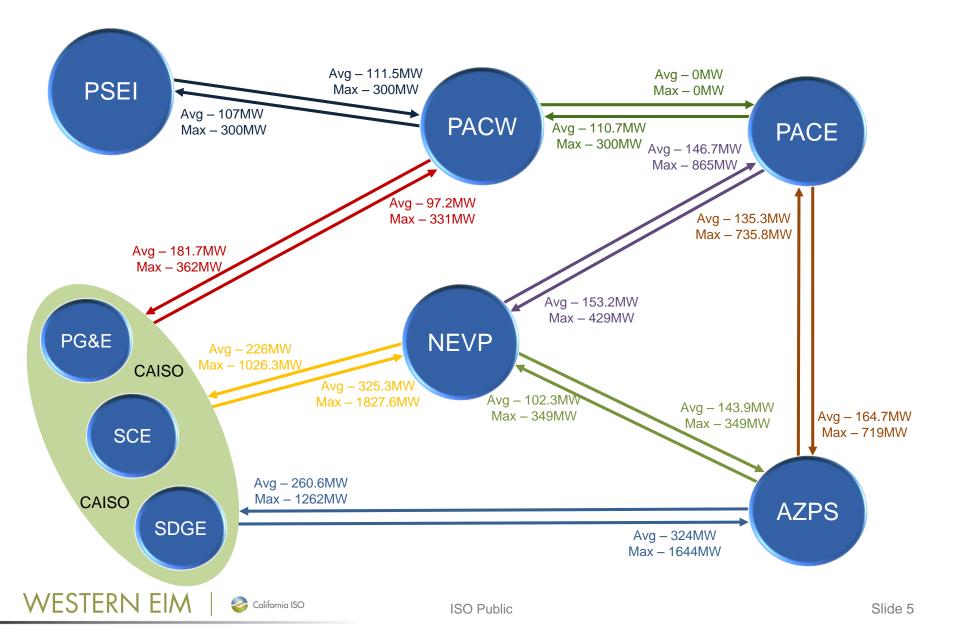


Year-to-date estimated metric tons of CO_2 displaced = 52,235

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📀 California ISO

Robust energy transfers observed in 2nd quarter



EIM Consolidated Initiatives stakeholder process

The proposal:

- Third Party Transmission Contribution
 - removed from scope and added to annual roadmap
- Management of Bilateral Schedule Changes
 - removed from scope due to lack of support
- Equitable Sharing of Wheeling Benefits
 - removed from scope and added to annual roadmap; tracking in Quarterly benefits report
- New EIM Functionality
 - moving forward (see next steps)

Next steps:

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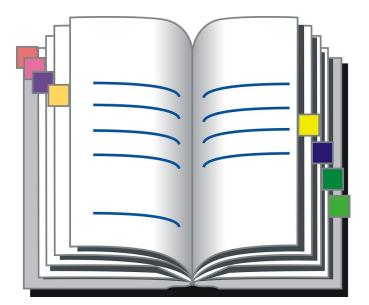
• Final comments due 10/11/17

📀 California ISO

- Seeking EIM Governing Body approval November 29
- Seeking ISO Board approval in December (Dec. 13 or 14)

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2018 CAISO Policy Initiatives Catalog update





CAISO Policy Initiatives Catalog process (pre-2018)

• Updated once per year

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- New proposed initiatives identified and initiatives that are no longer relevant deleted
- Classification of initiatives as I (in-progress), F (FERCmandated), N (Nondiscretionary), D (Discretionary initiatives)
- Classification of Energy Imbalance Market initiatives as E1 (EIM Governing Body's primary authority), E2 (EIM Governing Body's advisory role), E3 (Governing Body's hybrid- primary authority), or E4 (EIM Governing Body's hybrid advisory role).
- Ranking of discretionary initiatives using numerical scores that reflect overall benefit and feasibility
 - Based on the rankings, the information was then used to determine which policy initiatives would be a part of the Policy Initiatives Roadmap

Changes to the process (effective for 2018)

- The catalog will be published twice a year, during the months of February and August
- Catalog categorizations codes changed to I (in-progress), F (FERC-mandated), C (Committed), and D (Discretionary initiatives)
- Ranking priority: in progress initiatives, followed by FERC mandated initiatives, then committed initiatives (ex. committed to during a regulatory proceeding), and finally discretionary initiatives
- Submission of new initiative requests made through a template during any time of the year
 - Submissions for the catalog collected and considered up until the first Tuesday of January and July

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Initiatives submitted/requested for 2018

- Default Energy Bid option for resources outside the CAISO Balancing Authority Area
- Changes to the EIM Flexible Ramp Sufficiency Test Requirement
- Shorten the EIM timelines from T-57 to T-20

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- Options to limit Energy Transfer Scheduling Rights (ETSR) transfers
- Identification of enhancements to provide more modeling flexibility for generators and demand side products
- Options for day-head durable long-term Flexible Resource Adequacy/Flexible Capacity Product from qualifying loads/resources, inclusive of imports