



WESTERN ENERGY IMBALANCE MARKET BENEFITS

Second Quarter 2022 ■ ■ ■

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EXECUTIVE SUMMARY

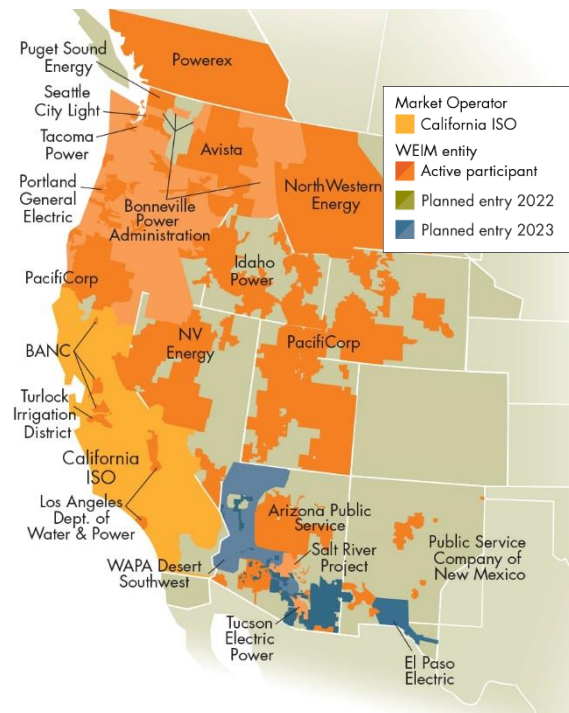
Gross benefits from WEIM since November 2014

\$2.39 billion

This report presents the benefits associated with participation in the Western Energy Imbalance Market (WEIM).

The measured benefits of participation in the WEIM include cost savings, increased integration of renewable energy, and improved operational efficiencies including the reduction of the need for real-time flexible reserves.

This analysis demonstrates the benefit of economic dispatch in the real time market across a larger WEIM footprint with diverse resources and geography.



Q2 2022 Gross Benefits by Participant

	(millions \$)
Arizona Public Service	\$10.14
Avista	\$5.16
BANC	\$68.09
BPA	\$4.36
California ISO	\$71.75
Idaho Power	\$8.44
LADWP	\$13.78
NV Energy	\$8.63
NorthWestern Energy	\$5.90
PacifiCorp	\$35.21
Portland General Electric	\$11.92
PNM	\$3.10
Puget Sound Energy	\$4.90
Powerex	\$4.66
Seattle City Light	\$2.90
Salt River Project	\$21.26
Tacoma Power	\$1.55
TEP	\$2.84
TID	\$2.85
Total	\$287.44

2022 Q2 BENEFITS

ECONOMICAL

\$287.44 M

Gross benefits realized due to more efficient inter-and intra-regional dispatch in the Fifteen-Minute Market (FMM) and Real-Time Dispatch (RTD)*

ENVIRONMENTAL

50,655

Metric tons of CO₂** avoided curtailments

OPERATIONAL

54%

Average reduction in flexibility reserves across the footprint

*WEIM Quarterly Benefit Report Methodology: <https://www.westemeim.com/Documents/EIM-BenefitMethodology.pdf>.

**The GHG emission reduction reported is associated with the avoided curtailment only. The current market process and counterfactual methodology cannot differentiate the GHG emissions resulting from serving ISO load via the EIM versus dispatch that would have occurred external to the ISO without the WEIM. For more details, see <http://www.caiso.com/Documents/GreenhouseGasEmissionsTrackingReport-FrequentlyAskedQuestions.pdf>

■ BACKGROUND

The Western EIM began financially binding operation on November 1, 2014 by optimizing resources across the ISO and PacifiCorp Balancing Authority Areas (BAAs). NV Energy began participating in December 2015, Arizona Public Service and Puget Sound Energy began participating in October 2016, and Portland General Electric began participating in October 2017. Idaho Power and Powerex began participating in April 2018, and the Balancing Authority of Northern California (BANC) began participating in April 2019. Seattle City Light and Salt River Project began participating in April 2020.

In 2021, new balancing authorities began participating in the Western EIM, with the Turlock Irrigation District (TID) in March 2021, the second phase of BANC in March 2021, and the Los Angeles Department of Water and Power (LADWP) and Public Service Company of New Mexico (PNM) in April 2021, followed by NorthWestern Energy (NWMT) starting in June 2021.

Avista Utilities (AVA) and Tacoma Power (TPWR), two utilities serving a combined 600,000 electric customers in the Pacific Northwest, became the newest members of the WEIM, with both beginning their participation on March 2, 2022. On May 3, 2022, the Bonneville Power Administration (BPA) and Tucson Electric Power (TEP) both joined the WEIM.

The Western EIM footprint now includes portions of Arizona, California, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming, and extends to the border with Canada.

■ WEIM ECONOMIC BENEFITS IN Q2 2022

Table 1 shows the estimated WEIM gross benefits by each region per month¹. The monthly savings presented show \$93.66 million for April, \$83.84 million for May, and \$109.94 million for June with a total estimated benefit of \$287.44 million for this quarter². This level of WEIM benefits accrued from having additional WEIM areas participating in the market and economical transfers displacing more expensive generation.

¹ The WEIM benefits reported here are calculated based on available data. Intervals without complete data are excluded in the calculation. The intervals excluded due to unavailable data are normally within a few percent points of the total intervals.

² For several quarterly estimates, CAISO benefits were calculated on a variation of the counterfactual methodology. For CAISO only the logic had considered offline resources as part of the bid stack in the counterfactual. In Q4 2021, CAISO identified some questionable results that drove persistent negative benefits for CAISO when considering offline resources. Since Q4 2021, the benefit calculation for CAISO area follows the same methodology applicable to all WEIM entities in which only online resources are used.

<i>Region</i>	April	May	June	Total
<i>APS</i>	\$3.69	\$3.83	\$2.62	\$10.14
<i>AVA</i>	\$1.98	\$1.72	\$1.46	\$5.16
<i>BANC</i>	\$4.71	\$13.78	\$49.60	\$68.09
<i>BPA</i>		\$2.26	\$2.10	\$4.36
<i>CISO</i>	\$42.10	\$14.56	\$15.09	\$71.75
<i>IPCO</i>	\$3.89	\$2.78	\$1.77	\$8.44
<i>LADWP</i>	\$4.42	\$5.30	\$4.06	\$13.78
<i>NVE</i>	\$2.49	\$2.40	\$3.74	\$8.63
<i>NWMT</i>	\$2.50	\$2.44	\$0.96	\$5.90
<i>PAC</i>	\$13.35	\$15.43	\$6.43	\$35.21
<i>PGE</i>	\$3.60	\$3.43	\$4.89	\$11.92
<i>PNM</i>	\$0.07	\$1.26	\$1.77	\$3.10
<i>PSE</i>	\$1.79	\$1.94	\$1.17	\$4.90
<i>PWRX</i>	\$0.64	\$2.05	\$1.97	\$4.66
<i>SCL</i>	\$1.10	\$1.00	\$0.80	\$2.90
<i>SRP</i>	\$5.95	\$7.04	\$8.27	\$21.26
<i>TPWR</i>	\$0.40	\$0.43	\$0.72	\$1.55
<i>TEP</i>		\$1.29	\$1.55	\$2.84
<i>TID</i>	\$0.98	\$0.90	\$0.97	\$2.85
Total	\$93.66	\$83.84	\$109.94	\$287.44

TABLE 1: Q2 2022 benefits in millions USD

■ CUMULATIVE ECONOMIC BENEFITS SINCE INCEPTION

Since the start of the WEIM in November 2014, the cumulative economic benefits of the market have totaled \$2.39 billion. The quarterly benefits have grown over time as a result of the participation of new BAAs, which results in benefits for both the individual BAA but also compounds the benefits to adjacent BAAs through additional transfers. The ISO began publishing quarterly WEIM benefit reports in April 2015.³

Graph 1 illustrates the gross economic benefits of the WEIM by quarter for each participating BAA.

³ Prior reports are available at <https://www.westerneim.com/Pages/About/QuarterlyBenefits.aspx>