

Energy Imbalance Markets in the West

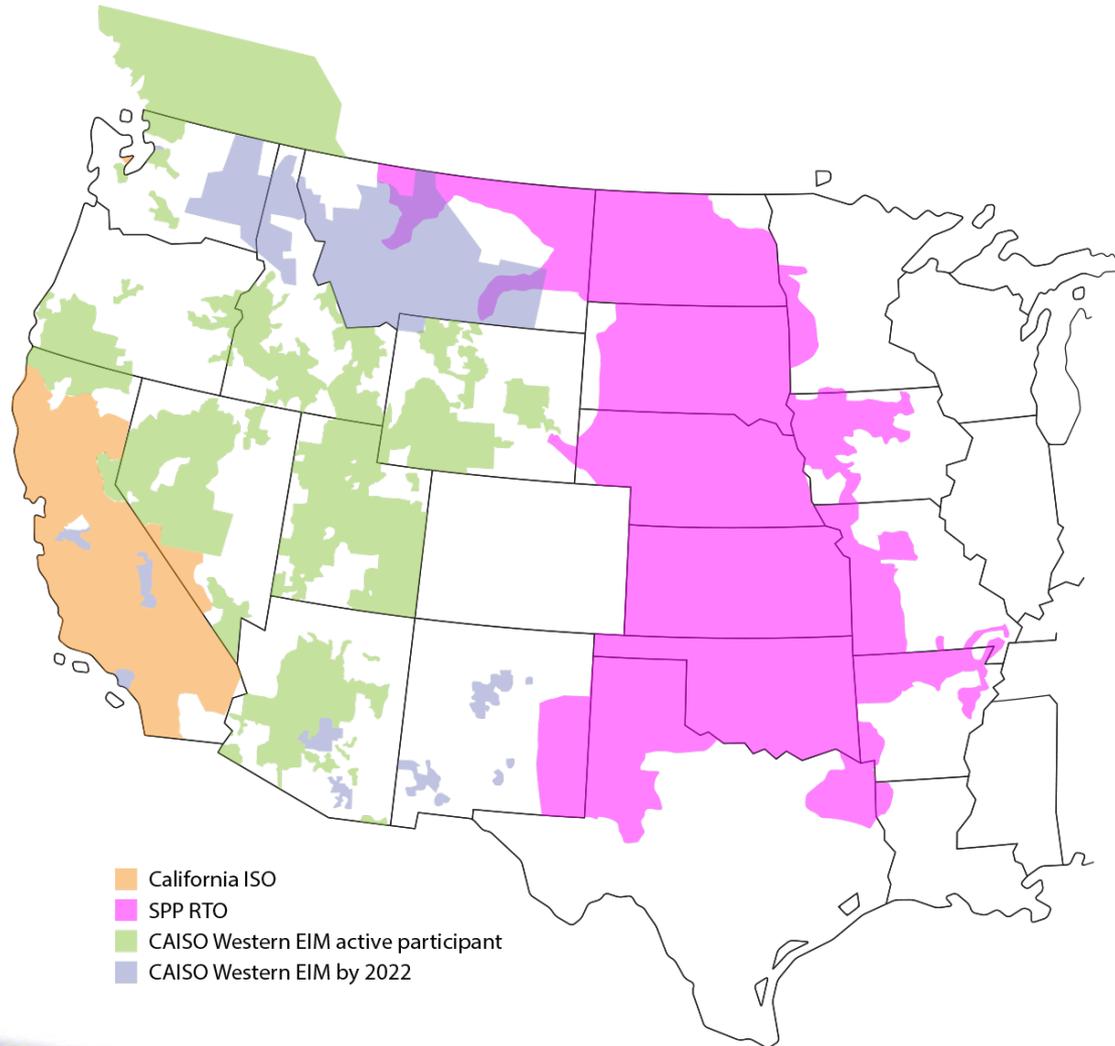
Sierra Nevada Region

June 27, 2019

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VP of Power Marketing

Markets are here



Why is WAPA interested in Markets?

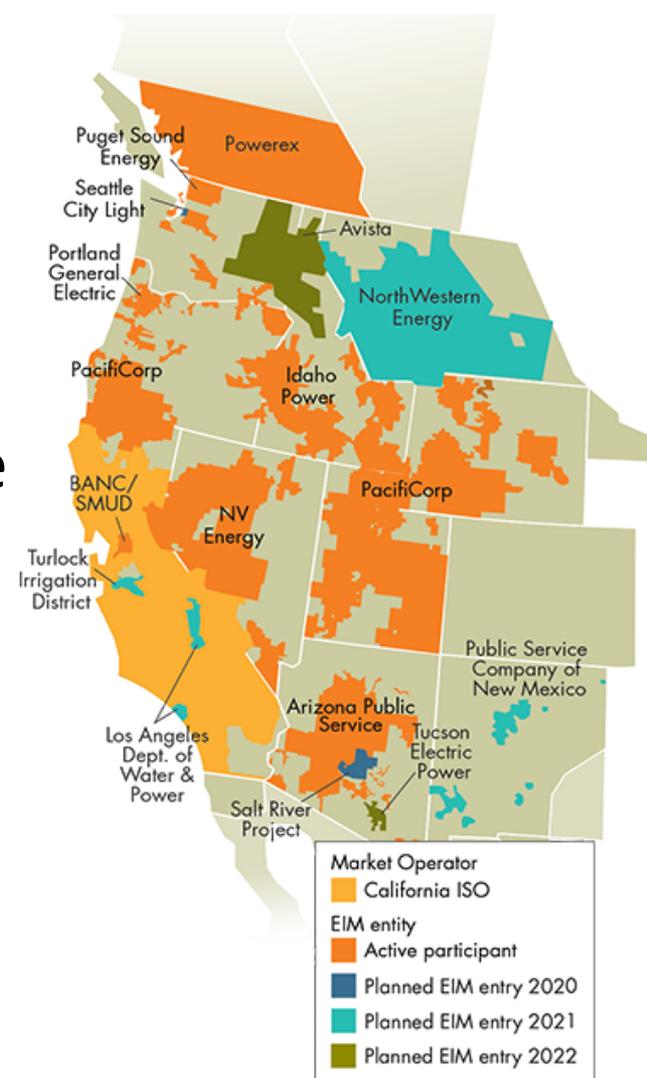
- Interest not new. Besides the April 2019 workshop; WAPA also hosted a similar workshops in 2016 and 2014 – committed to periodically reviewing market and industry trends and the way WAPA conducts business
 - UGP joined Southwest Power Pool
 - DSW and RMR pursued steps to form the Mountain West Transmission Group
- WAPA must respond as appropriate, to emerging industry trends so value/reliability of hydropower resource is maximized
 - Historically, markets were physically based, they are evolving into financially-based ones. WAPA and its customers need to be properly positioned so that we can continue to thrive in the new environment

Types of Market Structures

- Bi-lateral:
 - Between two parties
 - Entities determine generation fleet dispatch with in BAA
- EIM:
 - BAs continue to serve load and dispatch generation
 - Real-time imbalance served by market
 - Uses generation and geographic diversity
 - Participation is voluntary
- Fully Integrated Market
 - All generation and load served by market
 - Day-Ahead and Real-time markets
 - No transmission reservations

CAISO Markets

- CAISO operates:
 - Fully integrated market
 - Voluntary Energy Imbalance Market (EIM)
- SNR is only examining CAISO EIM market



What is an Energy Imbalance Market?

- EIM is an automated, voluntary real-time energy wholesale market that matches the lowest cost electricity supply with demand for every 15 minutes, and dispatches in every 5 minutes.
- Centralized market that integrates many Renewables into the Grid by expanding access to non ISO members (BA) from another region/state and hence adding geographic diversity.
- Integrate more green energy into market. As production increases in one area, helps to offset reduction in other region.

EIM Basics

- The EIM software automatically finds the lowest cost resources across a larger region to meet immediate power needs, and hence reduces the cost.
- EIM Market provides economic benefits to the BA (Balancing Authorities) as it dispatches the least cost resources. EIM creates a modern cost effective GRID.
- EIM market has full visibility of Transmission and Generation Outages and that way manages congestion better on transmission lines and provide reliability.

EIM Basics (video)



EIM Characteristics

- Voluntary Market
- Geographical Diversity
- Relative easy entry/exit
- Retain control over assets and decision making
- Avoids exposure to full CAISO costs
- Dispatch efficiency and savings
- Resources can be participating or non-participating
- Transmission provided

Why WASN-SNR is looking at EIM Now

- BANC Phase II provides an opportunity for WAPA-SNR and Reclamation to explore EIM participation that may increase:
 - The value of the CVP;
 - Improve operational flexibility; and
 - Optimize generation scheduling and market value
- CVP Power Initiatives Recommendation – Flexible Use of CVP Hydro Generation

Why WAPA-SNR is looking at EIM Now

- Exploring membership in the EIM will allow WAPA-SNR to keep pace with industry changes and determine how the EIM will affect WAPA's ability to accomplish its mission in more effective and beneficial way for its customers
- Economies/efficiencies of scale may exist -- It makes sense for WAPA-SNR to examine joining EIM in coordination with other BANC members

Statement of Principles

- Participation is consistent with statutory, regulatory, and contractual obligations.
- Maintain reliable delivery of power and transmission to our customers.
- CVP Resource participation in the EIM is and always will be voluntary and based on the ability of Reclamations authorities to participate.
- WAPA-SNR's decision to participate in the EIM will be based on a sound business rationale.

EIM Costs

- Upfront Costs
 - Phase II BANC implementation costs
 - Phase II WAPA and Reclamation implementation costs
- On-going cost
 - BANC EIM Entity costs
 - CAISO EIM costs

EIM Activities

- Working with Reclamation to determine level of CVP participation
- Working with BANC to perform gap analysis of WAPA and Reclamation's processes, tools and procedures.

Gap Analysis of Tools, Processes, and Procedures to Implement EIM

Primary System / Functional Area	Other Gap Areas
Generator Outage Submission	GRDT
Merchant DA & RT EIM Bid/Base Schedule Submission	FNM
EIM Entity Operations	Load Forecast
Settlement: EIM Participating Resource	OATT Updates
Settlement: BANC EIM Entity	EIM Participating Resource Agreement
After the Fact Analysis	
Meter Data Submission	
Generator Dispatch	

EIM Meeting Schedule

Activity	Dates/Time
1 st EIM Meeting	Thursday, June 27, 2019
2 nd EIM Meeting	Tuesday, July 16, 2019
3 rd EIM Meeting	Tuesday, July 30, 2019
4 th EIM Meeting	Wednesday, August 14, 2019
EIM Decision	Friday, August 16, 2019

Please Note:

- All meetings will be held at WAPA offices (114 Parkshore Drive, Folsom, CA 95630), from 9:00 am – 12:00 pm
- WebEx will be available for all EIM meetings

EIM Information

- SNR EIM related information is posted on WAPA website at:

<https://www.wapa.gov/regions/SN/PowerMarketing/Pages/western-eim.aspx>

Send comments or concerns to:

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or

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Shasta Dam