WESTERN ENERGY IMBALANCE MARKET
BOSR
Body of State Regulators

November Meeting

Chair: Gabriel Aguilera
Commissioner, New Mexico Public Regulation Commission

Vice-Chair: John Hammond
Commissioner, Idaho Public Utilities Commission

November 8, 2024

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Agenda

1. Opening Remarks and Announcements

2. The Proposed Day-Ahead Markets in the WECC – A Comparative Assessment of EDAM and Markets+ Design Features

3. CAISO Policy Initiative Update – Price Formation Enhancements Phase 2

Western Energy Markets Body of State Regulators Monthly Meeting

PRESENTED BY

John Tsoukalis

November 8, 2024

Brattle

Summary of Key Conclusions

- **Most market-related benefits will be driven by the transmission capabilities and diversity of load and generation of the market participants. That is, enabling trade has the greatest value among entities with the greatest diversity and connectivity.**
  - Our market participation benefit studies demonstrate this (e.g., NVE, PGE, etc.).
  - The surplus of solar in CA and connectivity between CA and neighboring states has largely driven benefits in favor of EDAM.
- **Both Markets+ and EDAM offer substantial benefits compared to the status quo, by making more efficient use of generation resources and transmission.**
  - Our market participation benefit studies demonstrate this as well (see WECC-wide results presented to PUCN).
- **We recognize that estimated cost savings offered by EDAM or Markets+ are not the only factor affecting market participation decisions.**
  - Differences in governance and some specific market design elements may be important for many potential participants.
- **We find some of the market design elements reviewed to be more attractive in EDAM while others are more attractive in Markets+.**
  - For example, we noted that Markets+'s mandatory inclusion of intertie trading is likely to improve market efficiency.
- **The availability of two market options has benefited the development of both EDAM and Markets+ as both markets have worked harder to offer an attractive and efficient market design. We expect stakeholders in both markets will continue to improve the market designs.**

The Brattle whitepaper can be accessed here.

Intertie Trading

Based solely on known known commitments, there will be two markets in the WECC (EDAM and SPP West), therefore there is significant opportunity to improve customer outcomes through cooperation across markets to enhance seams management.

- **In the whitepaper, we discussed Markets+'s mandatory inclusion intertie trading, which is something EDAM stakeholders can consider adopting.**
  - Intertie trading would help increase economic transfers across the market seams, but there are other measures that can be implemented across markets.
- **Lessons learned from eastern markets:**
  - RTOs and Market Monitors have been pointing out the inefficiency of seams transactions for nearly 15 years.
  - Coordinated Transaction Scheduling (CTS) has been implemented between several markets. Bids are based on forecasts of RT prices, often resulting in uneconomic trading.
  - Analysis of 2020-2022 RT prices and inter-market trading shows that bilateral trading at market seams capture only 70-80% of energy value, a loss of $50-$60 million/year for every 1,000 MW of transfer capability.
  - This value can only be captured by automated operational means, such as multi-market optimization of the interties or an interregional energy imbalance market, and the elimination of wheeling fees at market seams

See Intertie Optimization Report and FAQ.

Look Ahead and Real-Time Unit Commitment

Both Markets+ and EDAM include several unit commitment features that will greatly improve the efficient use of generation and transmission resources, including:

- Day-ahead commitment processes in both markets using Security Constrained Unit Commitment (SCUC)
- Intra-day commitment processes in both markets that employ SCUC:
  - Reliability Unit Commitment (RUC) in Markets+
  - Residual Unit Commitment (RUC) in EDAM

In the time frames closer to real-time:

- The CAISO performs:
  - A real-time unit commitment (RTUC) process every 15 minutes using SCUC,
  - A short-term unit commitment (STUC) process with SCUC every hour using a 4.5 hour forecast of demand, and
  - A real time dispatch (RTD) every 5 minutes.
- Markets+'s performs:
  - The real-time balancing market (RTBM) every 5 minutes to co-optimize resource dispatch and flexibility reserves.

See CAISO Tariff Section 31.5 for description of Residual Unit Commitment, Section 34.6 for Short-Term Unit Commitment, Section 34.3 for Real-Time Unit Commitment, and Section 34.5 for Real-Time Dispatch.
See Markets+ Tariff Section 2.2 for a description of Reliability Unit Commitment and Section 2.3.1 for Real-Time Balancing Market.

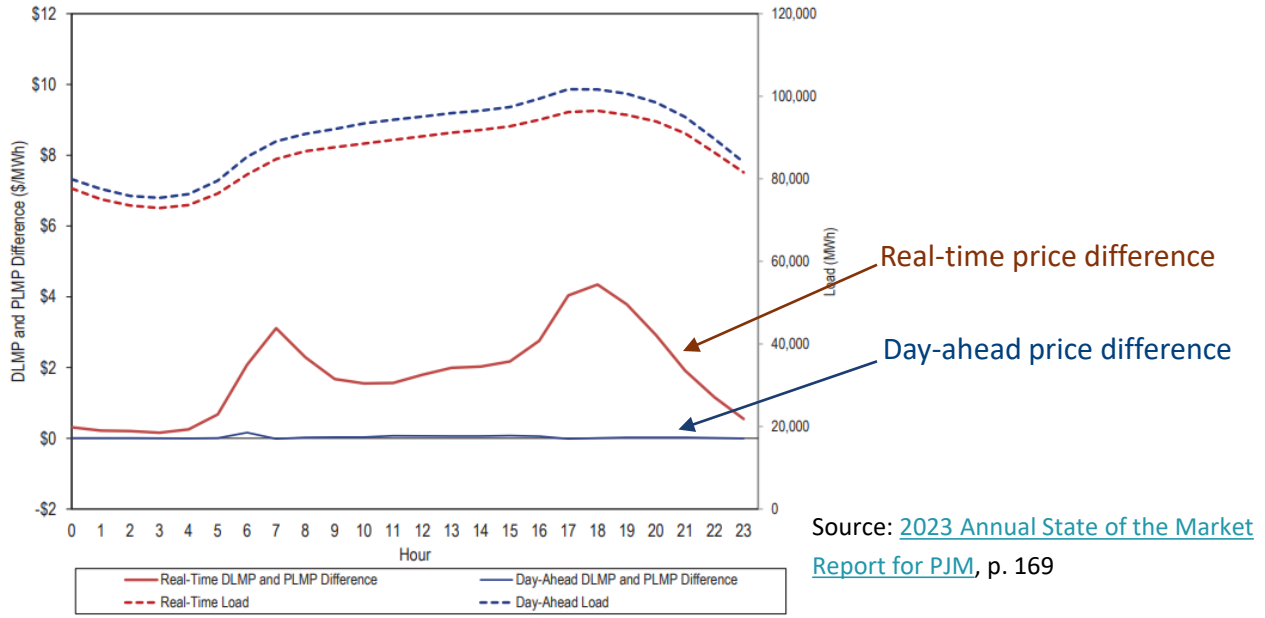
Fast Start Pricing

We note in the whitepaper, Fast Start Pricing (FSP) can improve efficient price formation, but the impact on revenue for generators and customer costs is likely limited.

- PWX points out in its response, that the impact on real-time prices is significantly larger than on day-ahead prices.
- In day-ahead markets, like EDAM and Markets+, the large majority of energy is settled at day-ahead prices, implying that the impact of FSP on generator revenues and load payments – and therefore customer benefits – will be limited.
- Note that E3 modeled FSP in the WMEG study and has stated that the impact on customer benefits is limited.

Example: PJM Fast-Start Pricing Impacts

Figure 3-26 Hourly average load and LMP difference: 2023



Source: 2023 Annual State of the Market Report for PJM, p. 169

Imbalance Reserves

In the whitepaper, we discuss how both market designs allow for customer savings through pooled procurement of imbalance reserves or flexibility reserves.

- The customer savings in pooled imbalance reserve procurement come from taking advantage of the diversity in load and renewable resource production between the BAAs in the market.
- Stakeholders in either market can consider expanding the market procurement to other types of ancillary services, which would allow individual member BAAs to hold fewer reserves, lower costs for customers, without sacrificing reliability of the system.

GHG Design

The whitepaper focused on the tradeoff between preventing resource reshuffling vs. allowing for more efficient market transactions. We noted that the Markets+ GHG design provides more flexibility in treating Type 2 Energy, and we discuss the tradeoffs of those options.

- SPP pointed out in their response that there is additional flexibility in their GHG design not discussed in our whitepaper. Specifically, the ability for market participants to differentiate between Type 1a and 1b Energy.
- The SPP Protocol on GHG reporting will provide market participants, especially in non-pricing states, the data they need to track their emissions and comply with state policies. The CAISO has an active initiative to address non-pricing state policies.

In the whitepaper, we focus on Type 2 Energy because this is the type of energy for which the market designs determine the surplus available for sale into GHG pricing states.

- The Markets+ approach offers two options for treating Type 2 Energy (Merit Order and Resource Owner).
  - We find that the Merit Order approach is likely to prevent leakage better than the EDAM approach but may limit some economic transactions in the market.
  - The Resource Owner approach is less restrictive on determining surplus Type 2 Energy, and so may result in more leakage but will allow for more economic transactions in the market. State policy makers determine if specified resources and use the Merit Order and/or Resource Owner approaches.
- The EDAM approach provides less flexibility for treatment of Type 2 Energy than Markets+; outcomes are likely to be similar to the WEIM.

Type 1A Energy is from a Specified Resource with an agreement to supply a GHG pricing state, which is only available to be attributed to that state. Type 1B Energy is the same as 1A, except it is available to be attributed to the GHG pricing state or other areas. Type 2 Energy is from a Specified Resource in excess of the resource's surplus threshold and is available for attribution inside or outside GHG pricing states.

Congestion Rent Allocation

Markets+ will allocate congestion to the rightsholders on constrained paths; EDAM allocates congestion revenue to the BAAs where it is located and transfer revenue to the two BAAs where the market transfer occurs.

- We recognize that stakeholders are divided on which approach works best for them.
- Some market participants have indicated that they prefer the Markets+ approach because it directly allocates congestion revenues to transmission customers that have purchased transmission rights *(see PWX response to our whitepaper at 8)*
- Others have said they prefer the EDAM approach
  - In their recent presentation to the NV Regional Coordination Task Force, NVE noted that they like the EDAM approach because it allows them to treat customers equally based on usage of the system.

Questions?

Presenter Bio

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John has broad experience helping clients address a range of issues related to wholesale power markets. He is an expert in electric market modeling, analyzing regional market participation, transmission benefit-cost analysis, transmission rate design, market design, detection of market manipulation and damages analyses, and strategic planning.

John has worked with electric utilities, cooperatives, public power authorities, transmission developers, generation owners, power traders, and ISO/RTO staff. He has assisted clients in developing whole market rules, ancillary service product, designing market power mitigation regimes and auction clearing mechanics, leading strategic planning initiatives, and modeling the power system to assess the benefits of new transmission, the benefits of participating in wholesale power markets, and the value generation assets.

John has provided expert testimony to FERC, provincial regulators in Canada, and in U.S. Federal Court related to transmission rate cases, alternative transmission rate designs, cost allocation, and contracts for wholesale power.

Brattle Group Practices and Industries

ENERGY & UTILITIES

- Competition & Market Manipulation
- Distributed Energy Resources
- Electric Transmission
- Electricity Market Modeling & Resource Planning
- Electrification & Growth Opportunities
- Energy Litigation
- Energy Storage
- Environmental Policy, Planning and Compliance
- Finance and Ratemaking
- Gas/Electric Coordination
- Market Design
- Natural Gas & Petroleum
- Nuclear
- Renewable & Alternative Energy

LITIGATION

- Accounting
- Analysis of Market Manipulation
- Antitrust/Competition
- Bankruptcy & Restructuring
- Big Data & Document Analytics
- Commercial Damages
- Environmental Litigation & Regulation
- Intellectual Property
- International Arbitration
- International Trade
- Labor & Employment
- Mergers & Acquisitions Litigation
- Product Liability
- Securities & Finance
- Tax Controversy & Transfer Pricing
- Valuation
- White Collar Investigations & Litigation

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- Pharmaceuticals & Medical Devices
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Price Formation Enhancements (PFE)

WEIM BOSR Monthly Meeting

November 8, 2024

Introduction

- The purpose of this presentation is to provide an update to the WEM Body of State Regulators (BOSR) on the status of the Price Formation Enhancements (PFE) initiative
- The PFE initiative seeks to improve price signals and market efficiency in the WEIM
  - Scarcity Pricing
  - BAA-Level Market Power Mitigation
  - Fast-Start Pricing
- The PFE initiative will directly affect wholesale electricity prices, which may in turn affect consumer prices.
  - Due to these price changes, this initiative may hold particular significance for the BOSR

Topic 1: Scarcity Pricing

- Scarcity pricing in electricity markets sets prices when supply falls short of demand. This mechanism incentivizes additional generation to come online and encourages demand reduction during critical periods.

- **How it works:**
  - Scarcity pricing sets penalty prices to reflect the value of reliability during supply shortages.
  - The market applies this penalty price when relaxing constraints becomes necessary to meet demand.
  - For example, if reserve shortages occur, the market price for energy will reflect the penalty price needed to procure those reserves.

- **Key topics covered in working group:**
  - Scarcity pricing concepts and existing ISO mechanisms.
  - Stakeholder feedback on problem statements, guiding principles, and priority themes for further discussion.

Topic 2: BAA-Level Market Power Mitigation (MPM)

- BAA-level MPM prevents suppliers from using market power to influence prices in the WEIM.

- **How it Works:**
  - When a BAA becomes isolated from the broader footprint, the market checks if there is enough supplier competition to keep prices competitive.
  - If a small number of suppliers control too much generation, the market ensures their offer prices do not exceed competitive levels to protect consumers and other market participants.
  - All markets include market power mitigation measures because market power is a common feature in electricity markets.

- **Key topics covered in working group:**
  - Level setting on existing BAA-level MPM construct and its history in the WEIM.
  - Stakeholder feedback on potential enhancements and the inclusion of the CAISO BAA in the MPM construct.

Fast-Start Pricing

- Fast-Start Pricing reflects the costs of fast-start generating resources, like natural gas peakers, that can quickly come online to meet demand.
- Traditional market pricing often doesn't let these resources set market prices even when they're effectively meeting the next increment of demand because their operating requirements limit their flexibility to adjust output.

- **How it works:**
  - FSP integrates the commitment costs of these resources into market prices to better reflect their role in meeting demand and ensure market prices reflect the full cost of serving load.

- **Key topics covered in working group:**
  - History and level setting on FSP, including past FERC NOPR and CAISO's previous experience.
  - Analysis of FSP impact including stakeholder feedback on scope and methodology.

Fast-Start Pricing (continued)

- Each ISO/RTO uses unique mechanisms for fast-start pricing, including:
  - How they define a fast-start resource
  - Which commitment costs they include and how they integrate them into prices
  - Which markets apply fast-start pricing

- Markets have developed products to compensate for resource flexibility, such as CAISO's flexible ramping product (FRP) and imbalance reserve product.

- CAISO conducted a rigorous analysis based on assumptions informed by stakeholders and practices in other markets to estimate fast-start pricing impacts on WEIM market prices.

PFE Working Group Discussions

- **Phase 1 (Completed)**
  - **Timeline:** August 2023 - September 2024 (18 working group meetings held).
  - **Stakeholder Engagement:** Collaborative approach and active stakeholder participation throughout the working group phase.

- **Phase 2 (Underway)**
  - Shifts from problem identification and principle setting to developing detailed proposals.
  - Phase 2 is divided into two tracks:
    - **Track 1:** Market Power Mitigation and Scarcity Pricing
      - **November 2024:** Begin formal policy development through proposal working groups.
      - **May 2025:** Publish and present a Straw Proposal.
      - **Early 2026:** Aim for Board/GB approval.
    - **Track 2:** Fast-Start Pricing
      - **November 2024:** Begin working group policy discussions.
      - **May 2025:** Publish and present Discussion Paper.

Stakeholder Process and Next Steps

- **Stakeholder Process**
  - Leveraging stakeholder feedback from working group discussions as a basis for policy development.
  - Dedicated working group sessions with focused agendas and ample preparation time to foster a collaborative stakeholder process
  - Guest speakers from other markets with FSP experience to share insights and lessons learned.

- **Next Steps**
  - Upcoming working groups November 14 (FSP) and November 20 (Scarcity/MPM)
  - We encourage continued engagement and participation in the policy design process

Upcoming Meetings

BOSR Wholesale Electricity Market Training

Wednesday, December 11, 2024, 9:00 AM - 12:00 PM PST

(Virtual)

December BOSR Meeting

Friday, December 13, 2024, 9:00 AM PST / 10:00 AM MST