

Joint Authors Publish “Issue Alerts” to Inform Public Dialogue on Day-Ahead Market Choices

In recent months, there has been considerable industry dialogue focused on the market seams that will exist between EDAM/EIM and Markets+, as well as the EDAM/EIM governance enhancements being pursued through the Pathways Initiative. While both topics are important, a number of the Markets+ Phase 1 Funding Parties¹ (“Joint Authors”) believe this dialogue is incomplete without also considering the numerous governance and market design differences between Markets+ and EDAM/EIM that are driving continued support for Markets+. To address this gap, the Joint Authors have worked together expeditiously to prepare timely information in this seventh “Issue Alert.”

The Joint Authors have shared Issue Alerts covering the following topics:

1. Governance
2. Reliability
3. Fair and Accurate Market Pricing
4. Seams Issues
5. Support for Clean Resources
6. Market Operator Actions & Modeling
7. Durable Customer Benefits

¹ Arizona Public Service Co, Chelan County PUD, Grant County PUD, Powerex Corp., Public Service Company of Colorado, Salt River Project, Snohomish PUD, Tacoma Power, Tri-State Generation and Transmission Association Inc. and Tucson Electric Power Company prepared this Issue Alert 7.

Issue Alert 7: Durable Customer Benefits

This Issue Alert is part of a series highlighting the key governance and market design elements that differ between Markets+ and EDAM/WEIM and why these differences have important consequences for customers in terms of reliability, economic value, and environmental objectives.

Key Take-Aways

- **Multi-region diversity:** Markets+ is on track to have a footprint that captures the load and resource diversity benefits of significant portions of the Pacific Northwest, Desert Southwest, and Rocky Mountain regions.
- **Clean, reliable, and affordable:** Customers within the Markets+ footprint will enjoy reliability, economic and environmental benefits.
- **Markets+ governance = durable benefits:** The Markets+ initial market design is robust, and the governance structure ensures the market can adapt to provide continued equitable and durable customer benefits as the grid evolves, with a strong role for states and public interest organizations.

This Issue Alert focuses on the characteristics of the expected Markets+ footprint and the benefits for utility customers when the generation and load diversity of this footprint is optimized under the Markets+ design. Prior [Issue Alerts](#) focused on the key governance and technical market design attributes that drive the Joint Authors' preference of Markets+ over the competing EDAM market offering.

Markets+ is on track to have a footprint that captures the extensive load and resource diversity benefits of significant portions of the Pacific Northwest, Desert Southwest, and Rocky Mountain regions.

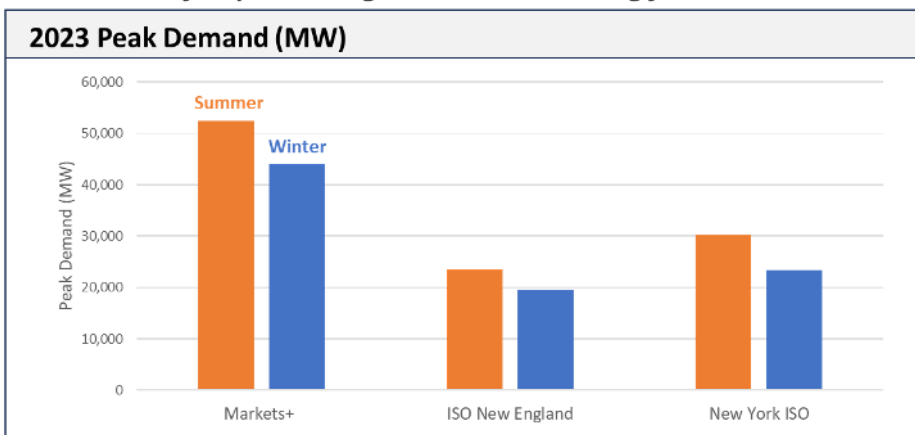
Much of the dialogue surrounding regional day-ahead market development efforts has focused on the potential market footprints. Joint Authors agree that the market footprint is one important consideration to maximize the benefits of a centralized dispatch of a large and diverse fleet of resources and loads, using available transmission connectivity to support market transactions.

The emerging footprint of Markets+—based on utilities that have participated in the Markets+ development effort to date and those that are funding or expected to fund Phase 2—is anticipated to be substantial in size with exceptional generation and load diversity, as it will have the following characteristics:

- Peak demand of over 52 gigawatts (GWs) and annual demand of over 280 terawatt-hours (TWhs);
- Significant load diversity between participants that are geographically split into a complementary mix of winter-peaking and summer-peaking utilities;
- Significant resource-type diversity and a complementary mix of participants with some having surplus summer resource capacity, some having surplus winter resource capacity, or both;
- Substantial clean flexible supply, largely from the extensive hydro storage systems in the Pacific Northwest, that complements the clean variable supply represented largely by solar in the Desert Southwest and wind in the Eastern Plains; and

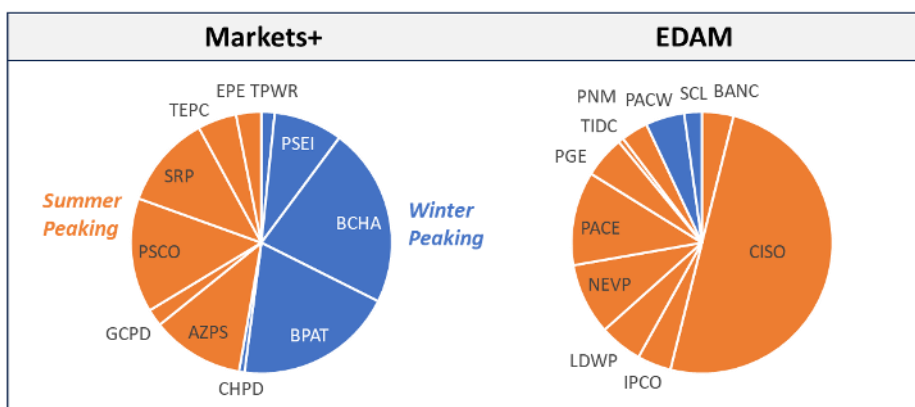
- A large geographical footprint—encompassing parts of 11 different states — resulting in a reduced probability that heat waves and cold snaps affect the entire Markets+ footprint simultaneously.

The Markets+ footprint is larger than some existing full RTOs



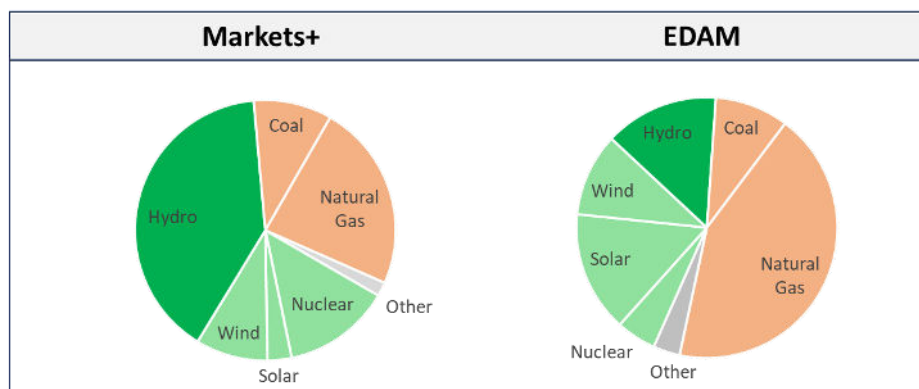
2023 coincident peak demand for summer and winter respectively (EIA and BC Hydro).

Markets+ provides significant seasonal diversity of demand



2023 peak demand for each BAA (EIA and BC Hydro).

Markets+ provides a diverse resource mix including clean, flexible supply



2023 output by energy source (EIA and BC Hydro). Hydro category includes storage hydro, run-of-river hydro and pumped storage.

Markets+ includes Balancing Authority Area (BAA) data for Arizona Public Service (AZPS), BC Hydro (BCHA), Bonneville Power Administration (BPAT), Chelan County PUD (CHPD), El Paso Electric (EPE), Grant County PUD (GCPD), Public Service Company of Colorado (PSCO), Puget Sound Energy (PSEI), Salt River Project (SRP), Tucson Electric Power (TEPC) and Tacoma Power (TPWR).

EDAM includes BAA data for Balancing Authority of Northern California (BANC), California ISO (CISO), Idaho Power (IPCO), Los Angeles Department of Water and Power (LDWP), Nevada Power (NEVP), PacifiCorp (PACW and PACE), Portland General Electric (PGE), Public Service Company of New Mexico (PNM), Seattle City Light (SCL) and Turlock Irrigation District (TIDC).

In addition to robust flow-based transmission connectivity provided by participating Markets+ Transmission Service Providers within each subregion of the Markets+ footprint², the Joint Authors expect the initial inter-regional transmission connectivity of approximately 1,000 MW linking the Pacific Northwest and Southwest/Rocky Mountain regions based on transmission rights across non-participating transmission systems that are expected to be voluntarily made available by rights-holders through the Markets+ Transmission Contribution Framework. Joint Authors also anticipate ongoing future expansion of inter-regional transmission connectivity due to transmission upgrades and expansions being pursued by a number of expected Markets+ participants, as well as through later market participation by additional entities.

As described in more detail in [Issue Alert 4](#), Markets+ is also designed to ensure that liquid trading continues to occur with entities outside the market footprint (including EDAM participants) through an import and export framework at all Markets+ boundary locations. This framework will ensure that existing trade between entities joining EDAM (including CAISO) and entities joining Markets+ continues, but that the terms, conditions, and prices associated with that trade will respect the Markets+ design developed under the Markets+ governance framework. As different utilities across the Western Interconnection move forward with their individual market choices and the likely configurations of different market footprints begin to take shape, regional dialogue will likely shift towards exploring market-to-market seams agreements that can enable improved congestion management, further reduce trading friction, and increase transfer capability between markets.

Customers within the Markets+ footprint will enjoy reliability, economic and environmental benefits.

Many utilities across the West, including several Joint Authors, have performed production cost studies to inform their analyses of joining a centralized day-ahead market. These studies generally seek to estimate the magnitude of operational efficiency gains that can be achieved through centralized unit commitment and energy dispatch across a regional footprint. While using production cost studies to inform a day-ahead market choice is a prudent utility practice, production cost studies have limitations resulting in them not fully capturing all potential utility customer impacts.

[Issue Alert 1](#) described several important limitations of production cost modeling's capability to effectively compare Markets+ and EDAM. For example, these models inherently assume that the two markets are largely identical in market design even though they differ in many material areas. This means that these studies cannot reflect the numerous market design issues that will affect how billions of dollars in annual energy trade value is allocated between participants and regions in the future.

Another concern with several of the studies using production cost models that have been published in recent months is the assumptions used about the cost of trading between market footprints. Specifically, some of these studies assume unrealistically high transactional friction and/or transmission costs between Markets+ and EDAM, inaccurately framing Markets+ and EDAM as isolated markets that will have limited trade with one another. In effect, these results wrongly assume that the choice to join a particular day-ahead market is also a choice to discontinue trading with the entities that join a different market. This defies real-world expectations and ultimately promotes an incorrect conclusion that being in the largest possible market footprint should be the only relevant consideration informing an entity's market choice above all other factors, including fundamental differences in governance and market

² [Issue Alert 4](#) describes how Markets+ utilizes a flow-based transmission dispatch approach, facilitating greater reliability and economic benefits relative to today by enabling more transfers across the same transmission infrastructure.

design that are not evaluated by these studies. In fact, much of the extensive trade across the west that occurs today will continue using existing transmission rights (with no incremental transmission cost), and additional cost savings will certainly result from that market-to-market trade in a two-market footprint.

Below, Joint Authors describe the broader range of benefits, including but not limited to production cost savings, they expect their customers to realize when the Markets+ footprint is optimized using the Markets+ design.

Reliability Benefits

Markets+ enables reliable electric service for customers.³ Participating in a centralized day-ahead market provides load serving entities with access to a large and diverse portfolio of regional resources above and beyond that provided by a stand-alone energy imbalance real-time market. Further, day-ahead scheduling through a centralized market can help provide a larger pool of cost-effective resources to meet multi-hour net load ramps and peak load obligations, improving reliability and potentially reducing the degree to which individual utilities need backup generation.

Markets+ is the only western day-ahead market option that applies a common resource adequacy framework to support reliability. Markets+ requires market participants to also participate in the Western Resource Adequacy Program (WRAP) and adhere to WRAP's standardized and transparent requirements, ensuring market participants secure their share of needed supply well in advance of the operating timeframe, increasing the likelihood the Markets+ footprint collectively will have sufficient grid capacity during times when weather or other events threaten local power supply. The Markets+ must-offer obligation complements WRAP and requires WRAP-identified, reliable capacity be made available to the market, ensuring the market has access to sufficient resources to meet energy and uncertainty needs in real-time. During times of grid stress, the Markets+ flow-based approach will provide improved access to available resources by better utilizing the real-time physical capability of market transmission. Further, Markets+ provides additional access to WRAP-quality resources through a reliability backstop mechanism that enables SPP as the independent market operator to work with Markets+ BAAs to secure additional supply during critical conditions.

Economic Benefits

Markets+ will support participants' ability to affordably serve their customers. At their core, centralized day-ahead and real-time markets seek to optimize unit commitment and dispatch from a larger pool of loads and resources with the ultimate objective of lowering the cost of producing power for consumers. Individual market participants typically realize these production cost savings by purchasing energy at a lower price, or selling at a higher price, relative to the cost of generating that electricity from their own resources. Joint Authors each expect to be net purchasers at times and net sellers at other times, and thus share a common interest in joining a market in which participants have confidence in fair and accurate wholesale prices under all system conditions. [Issue Alert 3](#) covers the Markets+ approach to price formation, highlighting several key market design features that are based upon best practices, including targeted market power mitigation, graduated scarcity pricing, fast-start pricing, and virtual bidding.

In addition to facilitating production cost savings, Markets+ helps participants financially protect their customers through its approach to allocation of day-ahead congestion revenue. Transmission congestion in a market footprint can result in local higher-cost power being dispatched to serve load. Congestion

³ [Issue Alert 2](#) includes a comprehensive description of how the Markets+ design centers around reliability.

revenue provides load-serving entities and other market participants with a critical financial tool to hedge congestion costs and improve price certainty. Traditional RTO/ISO markets rely on forward financial transmission rights markets to allocate congestion revenue. In Markets+, where multiple transmission service providers will continue to offer transmission service under their respective tariffs, this objective is achieved by allocating congestion revenue directly to the firm transmission rights-holders that make transmission available to Markets+, proportional to the congestion costs incurred on their specific transmission paths. By allocating congestion rents directly to firm transmission rights on a path-specific basis, the Markets+ approach provides market participants with an equitable, stable, and predictable approach to mitigating congestion costs.

In contrast, unlike Markets+, EDAM participants using firm transmission service will not receive the same protection from congestion costs. EDAM participants using firm transmission to deliver generation to load will face exposure to new and unhedgeable day-ahead congestion charges caused by constraints on different transmission systems across the EDAM footprint.⁴ EDAM will not return these congestion charges back to the firm OATT rightsholders that are exposed to the congestion costs, and will instead return the revenue to the BAA where the constraint is located, which public data show is most often the CAISO BAA.⁵ Among the many negative consequences of this design, it is likely to impose large new costs for the transmission customers and ratepayers of EDAM participants outside of California, to the benefit of customers in the CAISO BAA.

Environmental Benefits

Utility customers located within Markets+ will be part of a large footprint with a rapidly growing penetration of clean resources and a diverse set of clean energy policies, frameworks, and goals. Through its centralized unit commitment and dispatch, Joint Authors anticipate participation in Markets+ will provide participating utilities with increased access to clean resource types located in other participating utilities' territories that may be unavailable, or less abundant, in their own territories. For example, as mentioned above, the Markets+ footprint is expected to include the hydro-rich Pacific Northwest with the solar-rich Desert Southwest and wind-rich Eastern Plains. Unit commitment and dispatch across a footprint with the expected load and resource diversity in Markets+ will provide more opportunities for complementary clean-energy trade between regions that can reduce emissions, such as surplus Southwest solar used to displace Northwest hydro during midday hours, conserving water and enabling delivery of clean hydro to the Southwest to displace gas in other hours. These opportunities will expand as further transmission connectivity is established through transmission upgrades and expansion.

In addition to improving the utilization of existing clean and emitting resources, the Markets+ design will materially impact the feasibility and expected value of investing in clean energy in its footprint. [Issue Alert 5](#) details how the Markets+ approach to price formation, deliverability, and protection from congestion costs will support the continued development of clean resources in the Markets+ footprint.

Lastly, Issue Alert 5 also describes how the Markets+ design supports a wide range of environmental programs and objectives, including GHG-pricing programs such as Washington's cap-and-invest program, and other state clean energy requirements and voluntary emissions reduction goals. Markets+ provides a framework for utilities, whether or not they are in a GHG pricing area, to claim clean resources paid for by their customers, consistent with utility recovery of those investments in rates and

⁴ See PacifiCorp OATT FERC Filing, Docket ER25-951

⁵ For example, see Table 1.4, page 45 of the [Q1 2024 Report on Market Issues and Performance, CAISO Department of Market Monitoring](#)

consistent with utility planning practices, while also enabling GHG tracking and reporting of emissions across the market footprint.

The Markets+ initial market design is robust, and the governance structure ensures that the market can adapt and provide continued equitable and durable customer benefits as conditions evolve.

These Issue Alerts have highlighted the key elements of the initial design of Markets+ that resulted from a Western stakeholder-led, consensus-based effort and culminated in a stakeholder approval rating of more than 99.2% for the related tariff language.⁶ Although this initial market design strongly influences the Joint Authors' preference of Markets+ over the competing EDAM market offering, Joint Authors recognize the Markets+ design will inevitably change over time. Centralized markets must be prepared to adapt to market footprint evolution and to instances where a market design choice does not perform as intended.

At a foundational level, a well-designed robust and transparent governance framework is the critical factor that ensures a market can continue to provide durable customer benefits equitably across the market footprint as market participants' resource portfolios and utility loads change over time. The Markets+ governance structure, covered in detail in [Issue Alert 1](#) and the recent [Addendum to Issue Alert 1](#), remains the only day-ahead market option that provides a truly independent, stakeholder-driven governance structure, with a market operated by a neutral market operator.

Additionally, Markets+ governance provides a FERC-approved framework for state regulators and public interest organizations to engage in decision-making for the benefit of electric utility customers. The framework employs a robust and market participant-funded role for states by providing each state that has generation or load in the market a seat on the Markets+ State Committee (MSC). MSC members may have voting seats on task forces in Markets+ and have played a pivotal role in ensuring harmony with state policies in areas such as greenhouse gas accounting. The MSC also holds appeal rights at the Markets+ Participant Executive Committee (MPEC) and the Markets+ Independent Panel (MIP), ensuring the states retain a voice at the very highest level of Markets+ decision-making. Furthermore, the MSC is granted a seat on the Markets+ Nominating and Governance Committee (MNGC), giving states a formal role in reviewing and initiating changes in market governance and in nominating members to the MIP.

Public interest organizations are eligible to become Markets+ Stakeholders within the Independent Sector. Each Markets+ Stakeholder is provided one voting seat on the MPEC and may be appointed to voting seats in Markets+ working groups and task forces. In addition, there is a dedicated seat for public interest organizations on the MNGC, providing these organizations with the ability to review and initiate changes in the market governance and to participate in the nomination of members to the MIP.

Conclusion

Markets+ will provide reliability, economic, and environmental benefits to customers in the West through access to significant clean generation supply and resource and load diversity that spans multiple regions. An independent governance framework— inclusive of a neutral market operator— ensures those benefits are durable as the West's energy landscape evolves and that outcomes are equitable for customers in all participating states.

⁶ The 99.2% approval rating is noted in the March 1, 2024 Interim Markets+ Independent Panel meeting materials.