

Overview of Regional Market Development in the Western Interconnection

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INTRODUCTION

As most other regions of the country established regional electricity markets in the wake of FERC Orders 888, 889, and 2000, resulting in greater generator competition and wider transmission access through the establishment of Independent System Operators (“ISOs”) and Regional Transmission Organizations (“RTOs”), the West has remained in a largely balkanized operating paradigm with 38 Balancing Authorities (“BAs”) and relatively minimal coordination. There is only one regional market operating today in the Western Interconnection – the real-time Western Energy Imbalance Market (“EIM”). The EIM began market operations in November 2014 and is operated by the California Independent System Operator (“CAISO”).²

The rapid growth of renewable energy prior to 2014 was one of the many drivers that led to the formation of the EIM, with utilities seeking cost-effective tools that could reliably integrate these variable resources. A number of factors, including state renewable portfolio standards, federal tax credits, and the increasingly cost-competitiveness of renewables, has resulted in even greater renewable energy deployment since 2014.³ Western Interconnection utilities have responded by growing their own renewable energy portfolios, while simultaneously realizing millions of dollars in cost savings through their participation in the EIM. Newly confident in the benefits to be realized through more efficient market operations, Western utilities now appear eager to examine additional market services.

As a result, competition for market offerings in the West has drastically increased in recent years. While developing a West-wide RTO remains elusive, there seems to be widespread support for an incremental approach to further market development. This incremental approach is characterized by the latest market proposal to add day-ahead market services to the EIM – also known as the “EIM + Day-Ahead Market” or “EDAM.” The following discussion begins with a summary of the

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² While the CAISO offers day-ahead, real-time, and ancillary market services, its footprint is limited to the State of California (with the only exception being a very small service territory extending into the southwestern portion of Nevada with Valley Electric Association).

³ Solar and wind power have become cost-competitive (and sometimes cheaper) than more conventional forms of generation, with costs for wind decreasing by 41% since 2008 and costs for utility-scale solar decreasing by 64% since 2008. U.S. Department of Energy, [Revolution...Now: The Future Arrives for Five Clean Energy Technologies – 2016 Update](https://www.energy.gov/eere/downloads/revolutionnow-2016-update) 1 (2016), <https://www.energy.gov/eere/downloads/revolutionnow-2016-update>.

currently available market options in the West and concludes by highlighting takeaways and lessons learned from this region’s past successes and failures with regional market development.

Figure 1: Western Balancing Authorities⁴

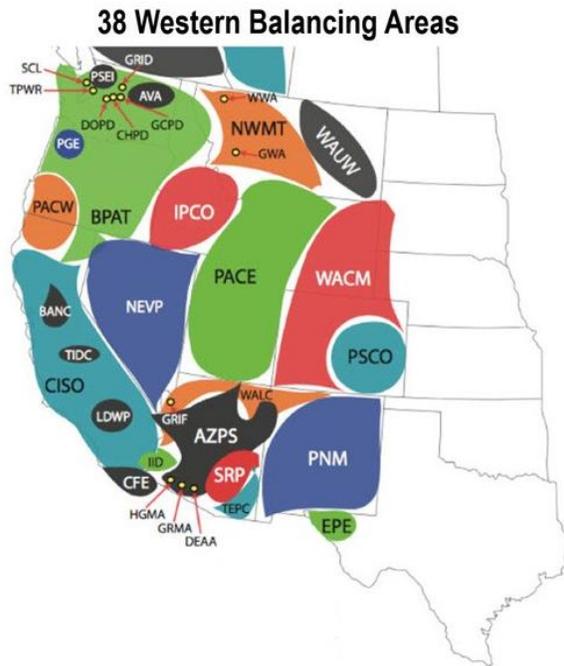
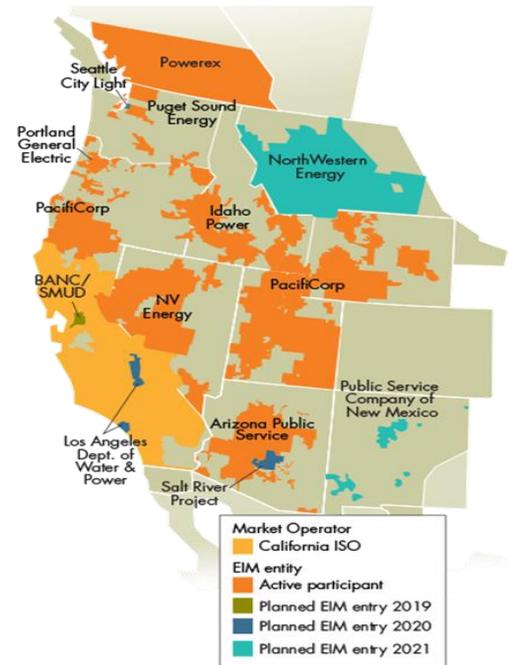


Figure 2: Current and Planned EIM Footprint⁵



MARKET OPTIONS

Energy Imbalance Market (“EIM”)

The Western EIM began market operations in 2014 and is the only regional energy market operating in the U.S. portion of the Western Interconnection. The EIM is a voluntary real-time market and is therefore not an RTO or ISO. Stated another way, it is an intra-hour balancing service, using CAISO’s real-time market software that commits generation every 15 minutes and re-dispatches committed generation every 5 minutes, in a least-cost manner. To date, 13 entities have elected to participate in the EIM and by 2020, the EIM’s footprint will include approximately two-thirds of the total load in the Western Interconnection.⁶

⁴ Source: www.rtoinsider.com.

⁵ Source: www.westerneim.com (note that this map does not reflect the potential addition of Bonneville Power Administration as an EIM participant beginning in 2022).

⁶ Comments of the California Independent System Operator, In the Matter of a Commission Investigation into the Feasibility of Public Service Company of New Mexico Becoming a Member of the Southwest Power Pool, New Mexico Public Regulation Commission, Case No. 17-00261-UT, at 5 (Nov. 21, 2017) (“CAISO Comments”).

CAISO is the EIM's market operator and provides quarterly benefits reports, including estimates of gross economic benefits and environmental benefits. The latest report indicates that the EIM has realized \$564.88 million in economic benefits and 324,284 metric tons of CO₂ reductions (in the form of avoided renewable energy curtailments in California).⁷ While benefits to date are undeniably significant, benefits are naturally limited by the fact that this market operates in real-time only (with an estimated 5-10% of energy transactions occurring in the real-time market).

EIM + Day-Ahead Market (“EDAM”)

In late 2017, responding to the interest of EIM Entities to add market services to the already successful EIM, CAISO proposed to make enhanced day-ahead market services available to EIM Entities through the EDAM initiative, with an estimated market “go live” date of October 2021. According to the CAISO, by offering enhanced day-ahead market services to the EIM, it presents an opportunity for EIM Entities “to explore expansion into the day-ahead timeframe, which would increase coordination and cost savings significantly[.]”⁸ CAISO further anticipates that these day-ahead market services will be offered at reduced cost when compared to the cost of full participation in CAISO's day-ahead market.⁹

In other words, through EDAM, CAISO intends to offer EIM participants the opportunity to participate in a day-ahead market, while still maintaining control of their respective transmission systems. As a result, BA boundaries and NERC-related responsibilities will remain intact. Additionally, integrated resource planning, resource adequacy procurement, and transmission planning and investment decisions will remain with each BA, with oversight provided by state regulatory commissions.

It is worth clarifying that despite the inclusion of day-ahead market services, EDAM is not an RTO or ISO and therefore, does not involve the transfer of control of transmission assets to the market operator. However, the amount of transactions occurring in the day-ahead market far exceeds that which occurs in the real-time market, and therefore, transmission will no longer be “free.” Rather, determining an appropriate transmission compensation methodology and sufficient transmission availability when moving from EIM to EDAM will be critically important if the EDAM is to succeed.

RTO Options

An ISO or RTO offers many benefits in addition to those provided by the EIM or an EDAM, with potentially significant additional cost savings resulting from centralized transmission operations and

⁷ Currently, CAISO only has the capability of estimating emission reductions for California resulting from the EIM's operations. West-wide emission reductions due to the EIM are anticipated to be far greater. California ISO, Western EIM Benefits Report Fourth Quarter 2018 14-15, 19 (2018), <https://www.westerneim.com/Documents/ISO-EIMBenefitsReportQ4-2018.pdf>.

⁸ CAISO Comments at 7-8.

⁹ *Id.* at 8.

planning. A number of RTO options (summarized below) have been considered in recent years in the U.S. portion of the Western Interconnection, although none have yet succeeded outside of the existing CAISO market.

CAISO Market Expansion. The CAISO essentially operates as a single-state RTO, with its board of directors being appointed by the Governor of California and confirmed by the state’s Senate. Regional expansion of the CAISO thus requires a legislative fix before this single-state RTO can expand into a regional RTO, with a truly independent board. Unfortunately, prior attempts at this legislative fix failed in 2016, 2017 and 2018. Previous study work – the “SB 350 Study” – estimated benefits to California of \$1-1.5 billion from regional expansion of the CAISO’s day-ahead, real-time and ancillary services markets.¹⁰ Despite these large potential benefits, political opposition to making significant changes to CAISO’s enabling legislation remains, seriously impeding the near-term likelihood of this market option.

PJM Market Expansion. In December 2017, PJM partnered with Peak Reliability, the Western Interconnection’s Reliability Coordinator (“RC”), to propose the creation of a new Western market beginning with real-time and day-ahead market services, similar to EDAM. In July 2018, Peak Reliability announced that it will cease RC operations at the end of 2019 due to insufficient support from Western utilities (with RC services to be provided by both CAISO and SPP beginning in 2020). Although Peak’s announcement effectively ended its partnership to offer market services with PJM, PJM continues to offer these same market services to Western utilities on a standalone basis. This market proposal has gained little traction to date.

SPP Market Expansion. The Mountain West Transmission Group (“MWTG”) is an informal collaboration of utilities located primarily in Colorado and Wyoming that formed in 2013 to evaluate opportunities for operational efficiencies within their footprint, ranging from a common transmission tariff to RTO membership.¹¹ The MWTG utilities began pursuing participation in SPP’s RTO in earnest in early 2017. Despite promising results from preliminary benefits studies, the negotiations between SPP and the MWTG ended in the fall of 2018.¹² The death knell to this market effort occurred when Xcel Energy (the largest MWTG utility) formally withdrew its membership from the MWTG and the negotiations with SPP in April 2018, citing concern with long-term benefits linked to the uncertainty of the market footprint’s future growth.

¹⁰ The Brattle Group et al., Senate Bill 350 Study: The Impacts of a Regional ISO-Operated Power Market on California 28-29 (2016), https://www.caiso.com/Documents/SB350Study_AggregatedReport.pdf.

¹¹The original MWTG utility members included: Basin Electric Power Cooperative, Black Hills Energy, Colorado Springs Utilities, Platte River Power Authority, Tri-State Generation and Transmission, and Western Area Power Administration.

¹² A December 2016 benefits study conducted by The Brattle Group found potential gross benefits of \$88 million per year stemming from the MWTG utilities’ participation in SPP’s RTO. The Brattle Group, Production Cost Savings Offered by Regional Transmission and a Regional Market in the Mountain West Transmission Group Footprint 4 (2016), <https://www.wapa.gov/About/keytopics/Documents/mountain-west-brattle-report.pdf>.

TAKEAWAYS & LESSONS LEARNED

*Unlike other parts of the country, no regional market has developed in the West that was the product of utilities reaching simultaneous agreement (the EIM began operations with only one utility committed – PacifiCorp). The list of failed RTO efforts in the West is long and includes: IndeGO, RTO West, Grid West, Desert Star, the Northwest Power Pool’s Market Assessment and Coordination Committee (“NWPP MC Initiative”), and most recently, the MWTG.

*The only RTOs that exist in the Western Interconnection (CAISO and AESO) were created by state or provincial legislation.

*Fear of giving up control seems to be a central theme in past failed RTO efforts. Whether loss of control is raised in governance, resource procurement, or transmission discussions, many stakeholders (particularly utilities and states) fear losing control when moving from business-as-usual to an RTO.

*Utilities and stakeholders alike appear united in supporting an incremental approach to regional market development in the West. The current effort by CAISO and EIM Entities to add day-ahead market services to the EIM – i.e., “EDAM” – characterizes this incremental approach, with the added possibility that EDAM could eventually transition to an ISO or RTO.

*A key to the EIM’s success has been its voluntary and flexible market design, including no exit fees and what essentially amounts to “free” transmission (i.e., no transmission access charges).

*Historically, investor-owned utilities have shown the greatest interest in regional markets, although publicly-owned utilities are becoming increasingly interested, as evidenced by their growing participation in the EIM.

*Shifts in transmission-related costs necessary to eliminate rate pancaking and optimize transmission access and operations among the West’s vertically integrated utilities has historically served as a roadblock to more efficient market operations.

*States often raise jurisdictional concerns in RTO discussions and are unwilling to allow a regional market to limit their prerogatives with regard to resource procurement.

*Establishing an independent governance model for a West-wide RTO often means different things to different stakeholders. What is clear is that CAISO’s existing governance model (where the board is appointed by the Governor and confirmed by the Senate) is unworkable on a regional basis. However, a necessary legislative fix remains to be seen.