

ORGANIZED MARKET RETROSPECTIVE

A Review of Organized Market Efforts in the West

Executive Summary

October 2021



I. Executive Summary

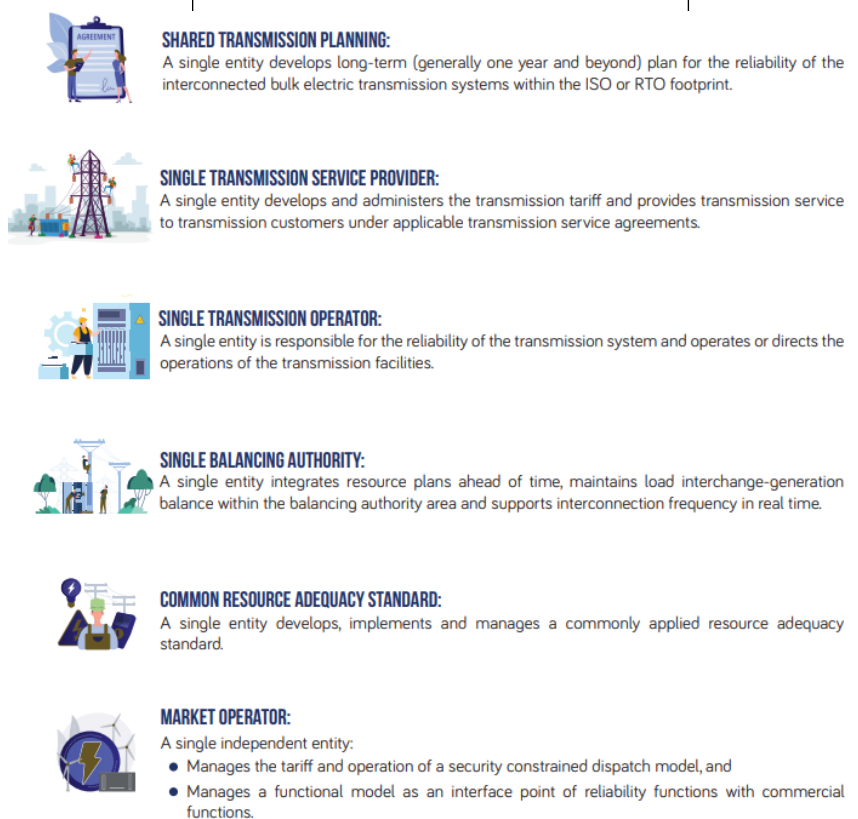
Purpose

While approximately 60% of the U.S. electric supply is managed by an Independent System Operator (ISO) or a Regional Transmission Organization (RTO), Northwest utilities do not presently participate in an organized market except for those utilities that voluntarily participate in the real-time Western Energy Imbalance Market (EIM). Over the last 25 years, the region has considered several utility-led initiatives to coordinate transmission planning and operations or to centralize electricity markets functions. The only initiative that has fully achieved its intended goal is the Western EIM. The purpose of this retrospective is to review past regional efforts to create shared market functions, identify challenges impacting the success of the efforts, and summarize key learnings and helpful actions to inform current and future efforts for exploring shared market functions in the Northwest.

Organized Market Functions

The ISO and RTOs that exist in other parts of the country perform various market functions for the utility participants under an independent governance structure (see Figure 1). While the market functions performed by the existing ISOs and RTOs are broad, many of those ISOs and RTOs started by only performing some of the market functions and incrementally added more functions. Northwest utilities have evaluated several different proposals over the last few decades that attempted to centralize some or all of these market functions. In the early explorations, the focus was on centralized transmission planning and operations. In the last decade, the focus has been on centralized electricity market operations.

Figure 1. Organized Market Functions



Western Initiatives

IndeGO

Northwest efforts to evaluate and explore organized markets began in 1995 with an effort to develop an Independent Grid Operator, referred to as IndeGO. IndeGO was initiated during federal legislative efforts to deregulate the electric power industry and a Federal Energy Regulatory Commission (FERC) rulemaking and resulting set of orders designed to provide for open access transmission (Orders 888 and 889). The effort ended in 1999 due to different perspectives on the scope of transmission to be included, questions about Bonneville Power Administration's (BPA) legal ability to participate and concerns that some utilities would pay higher incremental costs for transmission relative to their benefits.

Based on North American Electric Reliability (NERC) Definitions

RTO West and Grid West

A second attempt by Northwest utilities to establish an RTO in the Northwest called RTO West was initiated in response to FERC Order 2000 (1999) and the Notice of Proposed Rulemaking (NOPR) for a Standard Market Design (2002). The 2001 power crisis exposed the risks and significant financial impacts of poor market design and prompted concern about creating a California-style market in the Northwest. Other concerns about this approach were the high costs experienced by other RTOs across the country and the risk of losing local control as a result of FERC jurisdiction. Several public power entities formed a coalition to oppose RTO West and the FERC proposed Standard Market Design NOPR. In 2004, RTO West removed the market framework and continued as Grid West with a focus on coordinated transmission planning, service, and operations. Ultimately, agreement could not be reached among investor-owned and consumer-owned utilities, and the effort dissolved in 2006.

Northwest Power Pool Market Assessment and Coordination Committee Initiative

In response to the addition of large amounts of renewable resources in the region, federal and regional studies on the integration of renewable generation, and policy recommendations for the creation of an Energy Imbalance Market (EIM), the Northwest Power Pool Market Assessment and Coordination Committee (NWPP MC) Initiative was formed in 2012. The effort focused on the design for a within-hour security constrained economic dispatch to be run by an independent market operator. Simultaneous to the NWPP MC effort, PacifiCorp partnered with the California ISO (CAISO) to create an energy imbalance market built off the CAISO's existing real-time market. The NWPP MC effort continued its design and recruitment of a market operator, but the cost of developing a unique within-hour market proved to be challenging relative to the cost to join the newly launched Western EIM market hosted by CAISO. The NWPP MC Initiative was also impacted by issues associated with transmission use and cost allocation, varying viewpoints on the appropriate governance structure, and different long-term goals of the NWPP MC participants.

Western EIM

The Western EIM started in 2014 with PacifiCorp as the first participant. Today, more than 83% of load in the Western Interconnection is currently participating or planning to participate in the future. When considering the full range of functions that an RTO or ISO would offer, the EIM offers only a small segment of functions that would be integrated through an RTO or ISO. The voluntary nature of the EIM, enabling participants to determine when to join, exit, and participate, and the use of available and free transmission are all factors that have been identified as important to its success. Moreover, interested utilities were able to individually choose to join at their own pace without consensus of a broader utility group, which accelerated its formation. And, last and perhaps most importantly, the EIM built on existing platforms developed by the CAISO that made the effort relatively less expensive and faster to implement than establishing an entirely new market.

PacifiCorp as a PTO in CAISO

PacifiCorp quickly found significant benefits from the EIM, and in 2015 initiated a process to become a Participating Transmission Owner (PTO) in the CAISO. PacifiCorp and its regulators required a modification to the existing CAISO governance structure, which relies on a vote by the Board of Governors whose members are appointed by the Governor of California. The California Legislature required a study of the benefits to California of PacifiCorp joining the existing CAISO market as a PTO before contemplating any changes to the governance structure. In parallel, an effort was launched with regional parties to develop a proposed regional governance structure. Ultimately, the California Legislature did not pass legislation to change CAISO's governance structure due to California constituent concerns about perceived negative economic and environmental impacts. Without a change in the CAISO governance structure, PacifiCorp withdrew its interest.

Mountain West Transmission Group

Although not a Northwest initiative, a review of the efforts of the Mountain West Transmission Group is instructive. Utilities in the eastern side of the Western Interconnection initiated a process to develop a single transmission tariff for the participating parties. The group made progress and developed a draft tariff that addressed issues of cost allocation, increased transmission costs to some participants, and treatment of exports and wheel throughs. Prior to pursuing implementation of the joint tariff, the group evaluated the benefits of the joint tariff relative to joining the Southwest Power Pool (SPP) RTO market as full Participating Transmission Owners. The analysis showed that joining the existing SPP RTO market had the highest value and the group moved to collectively join the SPP RTO market. The effort ultimately ended, however, when Public Service of Colorado pulled out of the effort due to concerns about long-term value and regulatory risk. Eight of the remaining Mountain West Transmission Group members worked with SPP to launch the Western Energy Imbalance Service which began operation in February 2021.

Figure 2. Overview of Market Functions by Initiative

	SHARED TRANSMISSION PLANNING	SINGLE TRANSMISSION SERVICE PROVIDER	SINGLE TRANSMISSION OPERATOR	SINGLE BALANCING AUTHORITY	COMMON RESOURCE ADEQUACY STANDARD	MARKET OPERATOR: WITHIN HOUR OPTIMIZATION AND DISPATCH	MARKET OPERATOR: WITHIN HOUR OPTIMIZATION AND DISPATCH
TRADITIONAL RTO/ISO	✓	✓	✓	✓	✓	✓	✓
INDEGO 1995 - 1998	✓	✓	✓	✓			
RTO WEST/ GRID WEST 2000 - 2006	✓	✓	✓	✓		✓	
NWPP MC INITIATIVE 2012 - 2016							✓
CAISO EIM 2013 - PRESENT							✓
MOUNTAIN WEST TX GROUP 2013 - 2018	✓	✓	✓	✓	✓	✓	✓
SPP WEIS 2020 - PRESENT							✓

MARKET FUNCTIONS INCLUDED

INITIATIVE	PURPOSE	KEY DRIVERS	CHALLENGES
IndeGO <i>1995-1998</i>	Create an Independent System Operator to act as security coordinator, operate a single balancing authority area, and evolve into a single transmission provider	<ul style="list-style-type: none"> • Deregulation of other industries • FERC issues Notice of Proposed Rulemaking and Orders 888 and 889 	<ul style="list-style-type: none"> • Transmission cost allocation among participants • Different interests on level of transmission to be included • BPA legal determination that it could not sell, lease or transfer control of transmission without legislation
RTO West <i>2000-2004</i>	Create a Regional Transmission Organization that would operate a single balancing authority area, be the transmission operator, and implement a common market framework	<ul style="list-style-type: none"> • FERC issues Order 2000 • FERC Issues Standard Market Design Notice of Proposed Rulemaking 	<ul style="list-style-type: none"> • 2001 Power Crisis raised concern about the benefits and risks of organized markets • FERC Standard Market Design negatively impacted productive regional discussions • Public Power concerns about the costs, a California-style market and federal jurisdiction
Grid West <i>2004-2006</i>	Narrowed the scope of the transmission elements of RTO West and removed the common market framework	<ul style="list-style-type: none"> • Re-launch after RTO West to find common agreement 	<ul style="list-style-type: none"> • Public power concern about BPA turning over control to independent entity • Different perspectives on governance
NWPP MC <i>2012-2016</i>	Centralized Market Operator: Within-hour optimization and dispatch	<ul style="list-style-type: none"> • Studies on EIM • Significant growth of wind generation in BPA's Balancing Authority Area 	<ul style="list-style-type: none"> • Cost to build new market design and system difficult to justify relative to alternatives • Transmission design that relied on use of BPA system created cost allocation issues and pancaked transmission for those not adjacent to BPA • Consensus-based approach to decision making was viewed to allow stalling of progress
Western EIM <i>2014-Present</i>	Centralized Market Operator: Within-hour optimization and dispatch	<ul style="list-style-type: none"> • PacifiCorp-CAISO led effort to explore benefits of real-time imbalance market 	<ul style="list-style-type: none"> • New governance structure was needed for entities to be comfortable joining

INITIATIVE	PURPOSE	KEY DRIVERS	CHALLENGES
PacifiCorp as CAISO PTO 2015-2018	PacifiCorp to become a full Participating Transmission Owner in CAISO's existing market	<ul style="list-style-type: none"> PacifiCorp interest in additional optimization benefits 	<ul style="list-style-type: none"> CA entities were concerned about paying costs of new transmission planned by PacifiCorp, potential increase in coal dispatch and increased FERC jurisdiction Other states required a change to CAISO governance and CA legislature did not pass legislation needed to make the change
Mountain West Transmission Group 2013-2018	Shared Transmission Provider or join existing SPP RTO	<ul style="list-style-type: none"> Xcel Energy subsidiaries had found benefits in other markets. Public Service of Colorado (an Xcel company) initiated discussions with utilities 	<ul style="list-style-type: none"> Public Service of Colorado pulled out of the effort due to concerns about costs and regulatory risks

Key Takeaways and Proposed Next Steps for Market Coordination

Each of the initiatives to share market functions in the Northwest have been unique in their focus and approach but have run into similar obstacles. Some of the obstacles are typical of any multi-party effort to agree on shared operations of their transmission and power systems. The demonstration of benefits relative to cost is key and can be impacted by the alternatives that are evaluated. Governance is always a critical issue and market participants, state regulators, and environmental organizations have different perspectives. Finally, the process used to coordinate interested parties in the development of an organized market and whether they all are required to join can have an impact on success.

Some of the obstacles experienced in previous efforts are unique to the Northwest. BPA's large presence and statutory requirements create unique considerations. And specific preference customer interests can be difficult to align within an organized market structure. In addition, the large predominance of hydropower in the Northwest impacts how utilities find value in organized market functions. These issues have challenged each of the market efforts and must be addressed for any future success.

The Western EIM has achieved success with a low-cost, voluntary option using available and free transmission and leveraging the existing CAISO infrastructure. However, the Western EIM serves only a small portion of the functions that are offered by traditional ISOs and RTOs and the free transmission element cannot be expanded. Extension of the CAISO day-ahead market or creation of alternative market structures will require significant additional work.

TAKE-AWAYS:

- **All initiatives struggle over issues of transmission cost allocation, governance and cost relative to benefits**
 - Transition to a single transmission rate results in some paying more and some paying less. Without mitigation, this can be a barrier to entry for many.
 - Cost allocation methods for new transmission are complex and may increase costs to those that do not need new transmission.
 - It is challenging to develop a new governance structure due to the diverse interests of market participants, regulators and stakeholders.
 - Higher costs, uncertainties and regulatory risks have impacted the ability to develop a positive business case.
- **The Northwest includes unique considerations and interests that further complicate the challenging issues of transmission cost allocation, governance and costs relative to benefits**
 - BPA's extensive transmission ownership creates cost shift considerations that will impact any proposals that involve sharing of transmission.
 - Assurances are needed that hydro resources can retain the ability to meet nonpower obligations and are valued appropriately in the market.
 - The large number of non-jurisdictional public power utilities impacts the openness and willingness to engage in a FERC jurisdictional market.
 - There are 17 Balancing Authority Areas in the four Northwest states that would all have to agree that the benefits of giving up their Balancing Authority Area outweigh the costs.
- **The Western EIM was formed with a single entity and has expanded rapidly because of its incremental, voluntary nature and reliance on as available, free transmission.**
 - EIM was designed by a single entity and established momentum with a few key early additional members.
 - The cost to join the EIM is relatively low because it is a feature added on to an existing infrastructure.
 - The market operates on as available, free transmission avoiding issues of transmission use and cost allocation.
 - The decision to join, exit, and participate is voluntary, which has alleviated certain governance concerns that otherwise may have challenged its success.
 - Parties are able to act individually, without the need to achieve consensus with multiple stakeholders.
 - Parties are able to consistently demonstrate that the benefits exceed the costs.
- **The changing resource mix and load profiles in the West provide new reasons to evaluate increased market coordination**
 - Many Western states have passed legislation with significant clean electricity goals, which will further increase renewable resources on the system and the associated need for transmission and system flexibility.
 - As renewable resource penetration continues and traditional thermal resources retire in the West, there will be an increased need to capture load and generation diversity across the region and share resource capabilities.
 - The changing system coupled with changing demand due to climate and electrification support an efficient use of the transmission system and integration of demand-side solutions.
- **Success is more likely when there are regionally determined benefits rather than federal or other policy mandates**
 - Policy level discussions and analysis around markets have informed regional collaborations. However, direct engagement or directive by policy makers has negatively impacted progress.
 - FERC's perceived overreach in the early 2000s with Standard Market Design negatively impacted RTO West discussions and heightened jurisdictional concerns of public power.

PROPOSED NEXT STEPS:

- **Seek a long-term outcome that benefits the Western Interconnection while minimizing or mitigating harm to individual entities**
 - Establish overarching objectives and long-term goal for market evolution that provides benefit for the Western Interconnection while minimizing or mitigating impact to individual entities.
 - Identify objective criteria to evaluate the alternatives and define the path forward.
 - Develop a roadmap that will achieve the long-term goal, specifically identifying market functions that provide the highest reward relative to risk.
- **Identify any potential barriers for key parties to expanded market coordination**
 - Barriers for Bonneville participation have arisen in several of past initiatives.
 - Bonneville assessed several issues in the 2019 EIM Record of Decision related to Bonneville's authority to join the Western EIM; these issues should be evaluated in the context of broader market expansion.
 - Other market participants should also identify potential barriers.
 - Early identification increases likelihood of success by allowing time to address issues in the design of the market and/or legislatively, if needed.
- **Explore options early for tackling the hardest issues associated with shared transmission**
 - Explore methods used in other markets to minimize or mitigate the increase or shifts in costs to some entities associated with the shared use of transmission.
 - Evaluate regional cost allocation methods and their ability to address concerns about the cost of new transmission.
 - Assess other impacts of transitioning from contract path to flow-based use of transmission.
- **Recognize and work to align the varied regional interests around market coordination**
 - Proactively identify the key interests and risks to public power, investor-owned utilities and independent power producers.
 - Ensure BPA preference customers maintain preference value.
 - Recognize and minimize participant risk, including shareholder risk.
 - Meaningfully engage with state regulators and key stakeholders to ensure their support for final outcome.
- **Establish an independent and objective governance framework early to be used as a foundation for decision-making throughout the effort.**
 - Ensure any collaborative process is managed by a neutral entity empowered to hold the participants accountable to their stated objective.
 - Ensure qualified resources with relevant technical, operational, and market experience are empowered as champions to develop solutions.
 - Establish rules to that ensure market participants have a commitment to the market outcome and are not involved just to play defense.