



An RTO for the West: Opportunities and Options

By Michael Giberson

Over the next few years, key decisions about the potential RTO will reshape the region's electricity landscape.

Executive Summary

Over the next few years, many current and prospective political developments have the potential to impact the cost, reliability, and environmental profile of electric power service in the western United States. The formation of a regional transmission organization (RTO) represents the most transformative prospective development. Over the next few years, key decisions about the potential RTO will reshape the region's electricity landscape. This report aims to illuminate current developments in western power markets and outline what western stakeholders can learn from existing RTOs.

RTOs integrate real-time energy markets with electric transmission grid operations, aligning economic motives with the engineering realities of power generation and distribution to create a more efficient and reliable grid. For some proponents of an RTO, the primary benefit is greater reliability. For others, the primary benefit of promoting wholesale electric competition is that it helps set the stage for retail competition, which can translate to lower costs for consumers. Many also see such markets as a means to better integrate renewable energy.

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However, the path to an RTO is not without challenges. While their efficiency and reliability benefits are well-documented, RTOs also introduce new costs and complexities for policymakers and industry participants. Concerns about state autonomy over energy policy and the equitable distribution of benefits underscore the debate. This report explains what RTOs do, what benefits they bring, and the challenges that come along with them. In addition, the report dives into several topics central to advancing regional electric power coordination in the West.

Competition serves consumers, and that is as true with electric power as it is elsewhere. The industry has long been dominated by monopolies, but most of the historical justifications for monopoly no longer apply. Establishing an RTO or even two RTOs in the West promises substantial benefits over the status quo, including lower costs, improved reliability, and better environmental performance. While political challenges are significant, the economic and reliability advantages of an RTO make it a compelling option for the region. Policymakers should focus on creating a more comprehensive, efficient, and dynamic system of wholesale electric competition to serve the diverse needs of Western states.

Introduction

Several current and prospective policy developments will profoundly affect the cost, reliability, and environmental profile of electric power service in the western United States in the coming years. The most far-reaching of the prospective developments would be efforts to develop a regional transmission organization (RTO).

An RTO is, at its core, a real-time energy market integrated into electric transmission grid operations. The main reason for integrating energy markets and grid operations is to help align the economic motives of market participants with the engineering realities of electric power to bring about a more efficient and reliable grid.

Many of those who support an RTO believe the primary benefit would be greater reliability. For others, the primary benefit is that, by promoting wholesale electric competition, the stage will be set for retail competition, which, in turn, could translate to lower electricity costs for consumers. Many also see such markets as a means to better integrate renewable energy.

However, some industry professionals and policymakers have concerns about establishing an RTO. While the efficiency and reliability benefits are real, RTOs introduce new costs and can make it challenging for stakeholders to engage. Many opponents worry that an RTO will limit states' ability to control their own energy policies or that the cost savings will be captured by producers instead of reaching consumers.



The main reason for integrating energy markets and grid operations is to help align the economic motives of market participants with the engineering realities of electric power to bring about a more efficient and reliable grid.

While electric power industry insiders have been working through these issues for more than two decades, relatively few people outside of the industry and related policy circles are aware of or understand them. The purpose of this report is to help general audiences understand current Western power market developments and to share lessons learned from RTOs in other parts of the country. Importantly, in preparing this analysis, we reached out to a dozen public policy groups and think tanks in the West and spoke with energy consumers, industry representatives, and state energy and regulatory officials. These conversations helped shape the report.

The Current State of the Electric Power Industry in the West

At the local level, most consumers in the West are served by monopoly utilities that own the distribution wires stretching across cities, towns, and rural communities to serve business, government, and residential customers. Some utilities own long-distance transmission lines and their own electric generators, whereas some buy all of their power through long- and short-term contracts from other utility companies and may also rely on transmission services provided by those companies. Much of California, along with a bit of Nevada, is served by the California Independent System Operator (CAISO), a Federal Energy Regulatory Commission (FERC)-approved RTO.

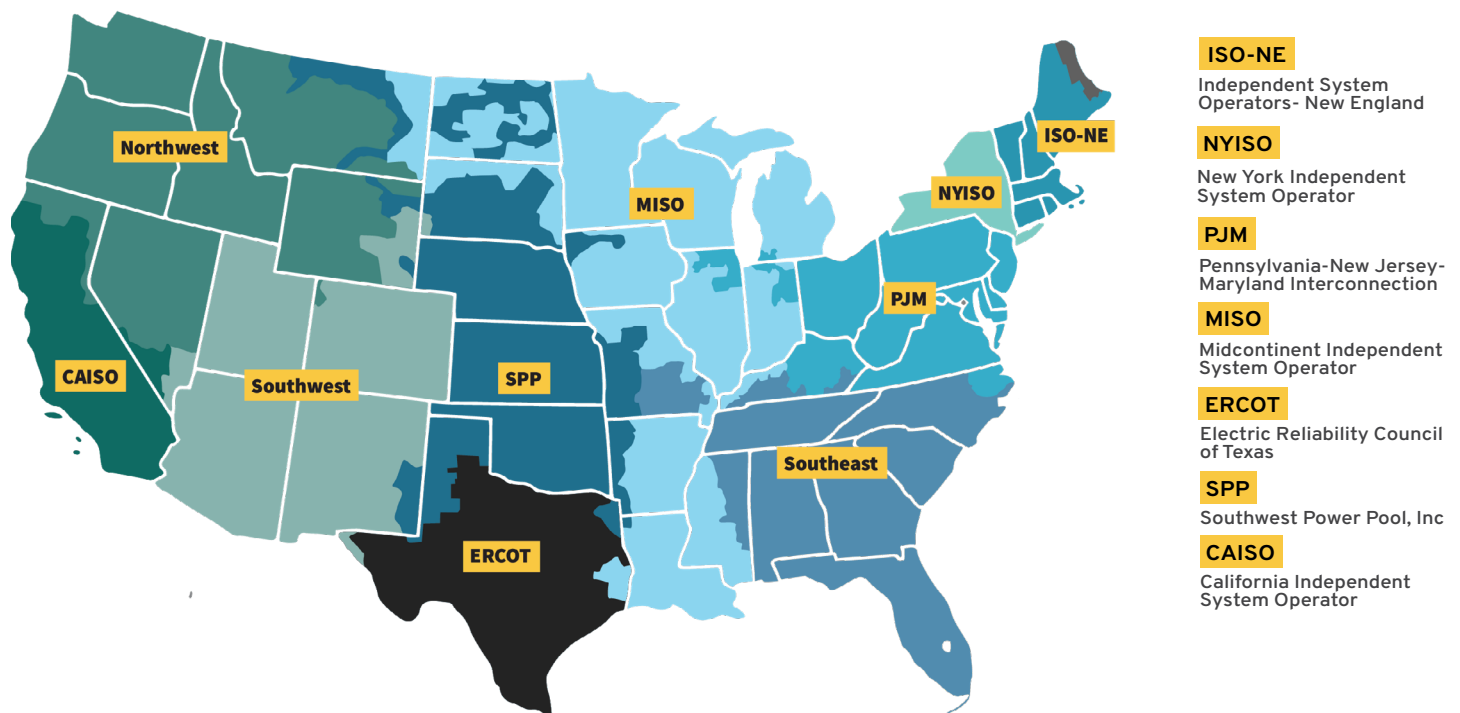
In talking about the electric power industry in the western United States, we are focused on what is called the “Western Interconnection,” which includes the Northwest, CAISO, and Southwest regions depicted in [Figure 1](#). This includes all states from the Pacific Coast to the Rocky Mountains, along with a bit of west Texas and small parts of South Dakota and Nebraska. The rest of the continental United States is served by two other grids, the Electric Reliability Council of Texas (ERCOT) grid that covers much of Texas and the Eastern Interconnection that covers the rest of the states.¹



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1. Today in Energy, “U.S. electric system is made up of interconnections and balancing authorities,” U.S. Energy Information Administration, July 20, 2016. <https://www.eia.gov/todayinenergy/detail.php?id=27152>.

Figure 1: U.S. Power Grids



Source: “RTOs and ISOs,” Federal Energy Regulatory Commission, last accessed July 17, 2024.
<https://www.ferc.gov/power-sales-and-markets/rtos-and-isos>.

In addition to the organizational diversity in the West, the electric power industry in this region is more decentralized and fragmented than elsewhere because major population centers are spread further apart. Similarly diverse arrangements do exist in the East, but public power institutions like the Bonneville Power Administration (BPA) and the Los Angeles Department of Water and Power play a much larger role in the West.²

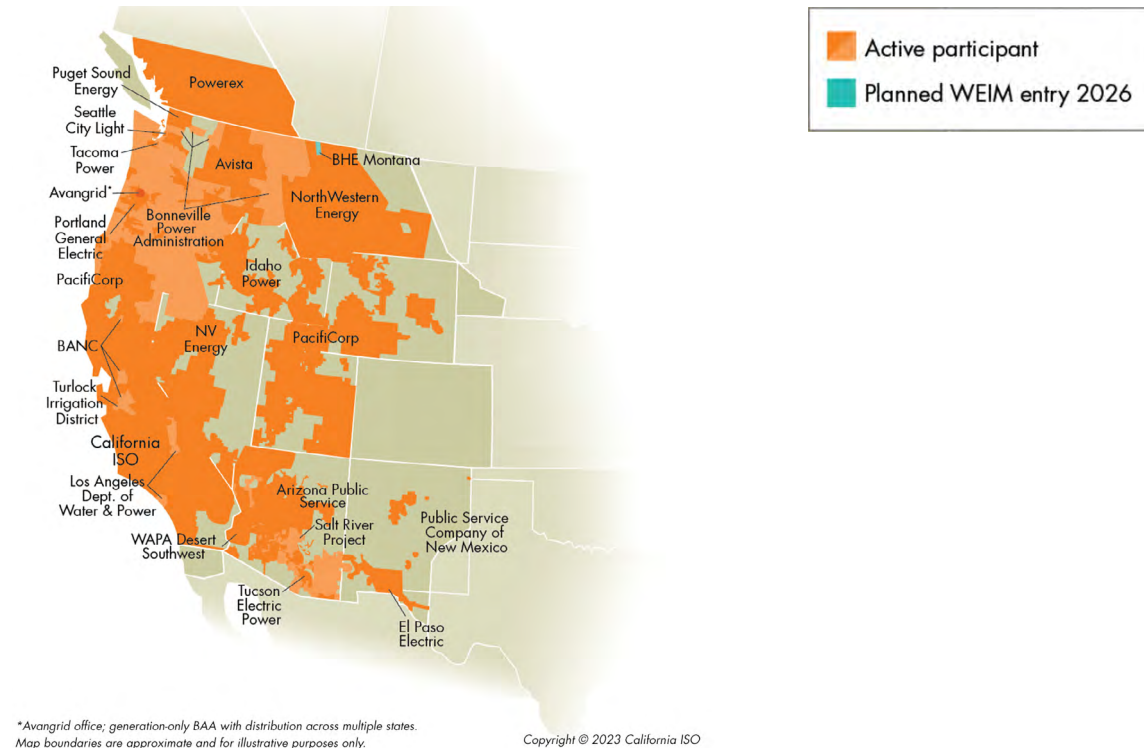
For about a decade, CAISO has operated the Western Energy Imbalance Market (WEIM), a real-time power market for participating utilities outside of the CAISO region, as shown in **Figure 2**. It is estimated that the WEIM has resulted in over \$5 billion in cost savings for utilities and their customers since it began operating in 2014.³ The Southwest Power Pool (SPP), another RTO, offers a similar energy imbalance service for other utilities in the West, shown in **Figure 3**. Although newer and smaller, SPP has brought benefits to participating utilities.⁴ More than anything else, seeing these real-time benefits of energy imbalance markets has motivated interest in an RTO and other regional initiatives in the West.

2. Richard J. Campbell, “The Power Marketing Administrations: Background and Current Issues,” Congressional Research Service Report R45548, March 1, 2019. <https://crsreports.congress.gov/product/pdf/R/R45548/2>.

3. “Quarterly Benefits,” Western Energy Imbalance Market, last accessed July 3, 2024. <https://www.westerneim.com/Pages/About/QuarterlyBenefits.aspx>.

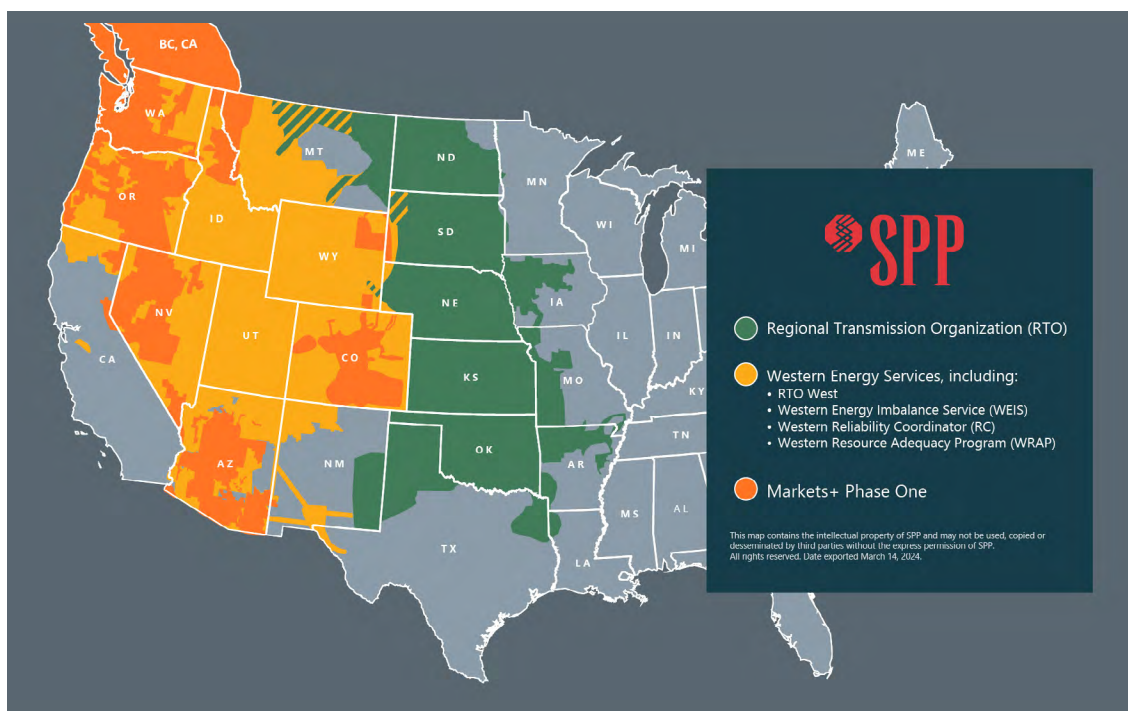
4. “Western Energy Imbalance Service Market,” Southwest Power Pool, last accessed July 3, 2024. <https://www.spp.org/western-services/weis>.

Figure 2: CAISO's WEIM



Source: “About,” CAISO, last accessed July 17, 2024. <https://www.westerneim.com/Pages/About/default.aspx>.

Figure 3: SPP, Markets+, and Western Energy Services



Source: “RTO Western Marketplace Map,” Southwest Power Pool, last accessed July 17, 2024. <https://www.spp.org/media/2072/rto-wes-marketsplus-map.jpg>.

Industry professionals and regulators have been working to improve both the WEIM and SPP energy imbalance markets by introducing day-ahead markets. Although standard energy imbalance markets work to resolve grid congestion and manage supply-and-demand imbalances in real time, day-ahead markets help utilities and grid operators better schedule generation for the coming day. Aside from this innovation, industry has also been working on improving regional resource adequacy and transmission with planning efforts that span much of the western United States.

These developments could combine to roll up into one West-wide RTO within the next few years, or perhaps two separate RTOs. It is also possible that efforts to boost coordination on transmission planning and resource adequacy for the region may be successful enough that an RTO is not deemed necessary, or that challenges to RTO formation prove to be insurmountable.

Consumers and policymakers should be aware of all of the possibilities so they can support the course of action that would best boost competition and yield consumer benefits: an RTO (or two). The RTO approach would loosen the grip that incumbent monopoly utilities have on the power industry, but it would also likely compel those utilities (who have supported market development) to oppose this option. State and federal policymakers should therefore remain focused on boosting reliability and industry efficiency while resisting monopoly utility preferences.

The Value of Competitive Markets

The benefits of competitive markets in electric power are quite like the benefits of competitive markets in general. When buyers can shop, sellers are encouraged to put forward their best efforts. Competition spurs efficiency, innovation, and competitive pricing.

Power generation and wholesale transmission operations are not natural monopolies; they are structurally competitive.⁵ The evidence from more than 20 years of RTO experience in Texas and the East shows that market competition has led to more efficient generator operations and better investment decisions.⁶ In areas that have allowed competition in both wholesale and retail electric power, the costs of inefficient operations or bad investments in generation are shifted from ratepayers to investors. Private developers compete to build the lowest cost, most efficient power plants, and that results in better technology choice and siting decisions. This system also pressures equipment manufacturers to offer less expensive and more efficient solutions. Without the guaranteed returns seen by monopoly utilities, market participants are more prudent in their spending and risk management.⁷ The efficiency effects are strongest in



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5. Daniel H. Cole and Peter Grossman, eds. *The End of a Natural Monopoly: Deregulation and Competition in the Electric Power Industry*. (Routledge, 2003).

6. Devin Hartman, "The Market Advantage: A Q&A with Joe Bowring," *R Street Shorts* No. 40, June 2017. <https://www.rstreet.org/wp-content/uploads/2018/04/RSTREETSHORT40-1.pdf>.

7. See, e.g., Michael Giberson and Devin Hartman, "Electric Paradigms: Competitive Structures Benefit Consumers," *R Street Policy Study* No. 293, September 2023, pp. 10-15. <https://www.rstreet.org/research/electric-paradigms-competitive-structures-benefit-consumers>; James Bushnell et al., "Review of the Economics Literature on US Electricity Restructuring," Bushnell: University of California Davis, Working Paper, Feb. 23, 2017. <http://bushnell.ucdavis.edu/uploads/7/6/9/5/76951361/economics-literature.pdf>.

states that have adopted competition at both the wholesale and retail level of the electricity business. While this report focuses on developments affecting wholesale competition—not retail choice—effective retail competition requires competitive wholesale power markets. Proponents of retail choice should be committed to advancing competition in wholesale electric power as a preliminary step to fully freeing consumers from the adverse effects of monopoly.

In the western United States in particular, stakeholders may be reluctant to embrace electric competition because of past market abuses associated with Enron and the California energy crisis of 2000 and 2001. A recent newspaper column was titled, “Western grid proposal threatens Enron-like crisis.”⁸ As industry observers may recall, tight market conditions and market manipulations by traders at Enron and other companies led to high power prices, shortage conditions, and blackouts in the first few years of California’s restructured power markets.⁹ Yet there are good reasons to think Enron-style market manipulations and the 2000 California-style energy crises are a thing of the past.

First, the Western grid has always featured a great deal of wholesale power trading, in California and elsewhere, and that trading has not resulted in any similar market scandals. This wholesale power trading, happening through bilateral deals, on organized markets like the Intercontinental Exchange (ICE) and on grid-integrated markets (including CAISO’s WEIM and SPP’s Western Energy Imbalance Service Market [WEIS]) has continued for years without issue.¹⁰ In addition, no other RTO has seen the kind of market manipulation exhibited in California in 2000 and 2001.¹¹ If wholesale trading of power itself was destabilizing, we would have seen many more examples of market abuse.

Second, the California energy crisis spawned a flurry of investigations and analyses of what went wrong, which were conducted by regulators, industry, and academics.¹² A common conclusion was that the early CAISO market had several unique flaws leaving it exposed to abuse when market conditions were tight, as they were in 2000 and 2001 because of low hydropower resources.¹³ Notably, the design flaws found in the early CAISO market were not shared by other RTOs operating at that time.¹⁴ Additionally, CAISO was reformed to work



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8. Tom Elias, “Western grid proposal threatens an Enron-like crisis,” *Ventura County Star*, March 13, 2023. <https://www.vcstar.com/story/opinion/2023/03/13/western-grid-proposal-threatens-an-enron-like-crisis/69999981007>.
9. “Addressing the 2000-2001 Western Energy Crisis,” Federal Energy Regulatory Commission, last accessed Aug. 7, 2024. <https://www.ferc.gov/industries-data/electric/general-information/addressing-2000-2001-western-energy-crisis>.
10. “Energy Primer: A Handbook for Energy Markets Basics,” Federal Energy Regulatory Commission, Jan. 17, 2024. <https://www.ferc.gov/news-events/news/ferc-staff-issues-2024-energy-primer-handbook-energy-market-basics>.
11. Devin Hartman, “Exorcising the Ghosts of Enron,” R Street Institute, July 29, 2024. <https://www.rstreet.org/commentary/exorcising-the-ghosts-of-enron>.
12. “Addressing the 2000-2001 Western Energy Crisis,” Federal Energy Regulatory Commission, last accessed July 9, 2024. <https://www.ferc.gov/industries-data/electric/general-information/addressing-2000-2001-western-energy-crisis>.
13. Paul L. Joskow, “California’s electricity crisis,” *Oxford Review of Economic Policy* 17:3 (2001), pp. 365-388. <https://academic.oup.com/oxrep/article-abstract/17/3/365/438600>; James Bushnell, “California’s electricity crisis: a market apart?,” *Energy Policy* 32:9 (2004), pp. 1045-1052. <https://doi.org/10.1016/j.enpol.2003.11.003>.
14. Darren Bush and Carrie Mayne, “In (Reluctant) Defense of Enron: Why Bad Regulation Is to Blame for California’s Power Woes (or Why Antitrust Law Fails to Protect against Market Power When the Market Rules Encourage Its Use),” *Oregon Law Review* 207 (2004). [https://heinonline.org/HOL/LandingPage?handle=hein.journals/origlr83&div=11&id=&page=; Jonathan Falk, “Substituting Outrage for Thought: The Enron ‘Smoking Gun’ Memos,” *The Electricity Journal* 15:7 \(August–September 2002\). \[https://doi.org/10.1016/S1040-6190\\(02\\)00342-1\]\(https://doi.org/10.1016/S1040-6190\(02\)00342-1\); Richard J. Pierce, Jr., “Market Manipulation and Market Flaws,” *The Electricity Journal* 16:1 \(January–February 2003\). \[https://doi.org/10.1016/S1040-6190\\(02\\)00416-5\]\(https://doi.org/10.1016/S1040-6190\(02\)00416-5\).](https://heinonline.org/HOL/LandingPage?handle=hein.journals/origlr83&div=11&id=&page=; Jonathan Falk, “Substituting Outrage for Thought: The Enron ‘Smoking Gun’ Memos,” The Electricity Journal 15:7 (August–September 2002). https://doi.org/10.1016/S1040-6190(02)00342-1; Richard J. Pierce, Jr., “Market Manipulation and Market Flaws,” The Electricity Journal 16:1 (January–February 2003). https://doi.org/10.1016/S1040-6190(02)00416-5)

more like other RTOs and has subsequently not seen similar market meltdowns. Finally, more robust market oversight and anti-manipulation enforcement mechanisms were developed and have proven effective in response to the 2000-2001 Western energy crisis.¹⁵

Competitive Markets and Reliability

The California market meltdown led to periods of rolling blackouts and brownouts in 2000 and 2001, and those reliability failures lead many to believe that competition comes with a higher risk of power interruptions.¹⁶ Concerns over reliability were heightened by two more recent events: CAISO's rolling outages in August 2020 and the energy system failures in Texas during Winter Storm Uri in February 2021.¹⁷ Nevertheless, as explained below, competition tends to enhance reliability.¹⁸

Most power outages stem from weather damage to local distribution lines, not from generation shortages or other system-wide problems.¹⁹ Even in areas with competitive wholesale markets and retail choice, these distribution systems remain regulated monopolies. Thus, the primary cause of service interruptions for consumers is unrelated to wholesale or retail competition in the electricity sector.

When system-wide problems do arise, RTOs enhance rather than detract from reliability. They have superior situational awareness over a wider area than is possible for a single utility, so when challenging weather conditions occur or a large generator unexpectedly drops out of service, an RTO will know which generation and transmission resources are available to respond immediately. Although all utilities have contingency plans to maintain service during unexpected events, RTOs' access to a wider range of resources over a broader area offers a greater level of adaptability to more extensive issues, like when a weather event threatens large states or multiple states at once.

Consider the examples of Winter Storms Uri (2021) and Elliott (2022). One of Texas's problems during Winter Storm Uri was the ERCOT system's small size relative to the storm. ERCOT's transmission grid is not well connected to neighboring regions, so it was unable to draw on external support. Utilities in Texas just outside of the ERCOT grid saw similarly extreme conditions but were well-connected to generation resources via the Eastern Interconnection and could therefore reach across longer distances for emergency electricity help.



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15. Hartman, "Exorcising the Ghost of Eron," <https://www.rstreet.org/commentary/exorcising-the-ghosts-of-enron>; See, e.g., Office of Energy Policy and Innovation, "Energy Primer: A Handbook of Energy Market Basics," Federal Energy Regulatory Commission, December 2023. <https://www.ferc.gov/media/energy-primer-handbook-energy-market-basics>.

16. "Addressing the 2000-2001 Western Energy Crisis," Federal Energy Regulatory Commission, last accessed Aug. 7, 2024. <https://www.ferc.gov/industries-data/electric/general-information/addressing-2000-2001-western-energy-crisis>.

17. "Preliminary Root Cause Analysis: Mid-August 2020 Heat Storm," California ISO, Oct. 6, 2020. <https://www.caiso.com/documents/preliminary-root-cause-analysis-rotating-outages-august-2020.pdf>; "The Timeline and Events of the February 2021 Texas Electric Grid Blackouts," The University of Texas-Austin Energy Institute, July 2021. <https://energy.utexas.edu/sites/default/files/UTAustin%20%282021%29%20EventsFebruary2021TexasBlackout%2020210714.pdf>.

18. Giberson and Hartman. <https://www.rstreet.org/research/electric-paradigms-competitive-structures-benefit-consumers>.

19. U.S. Energy Information Administration, "U.S. electricity customers averaged five and one-half hours of power interruptions in 2022," Jan. 25, 2024. <https://www.eia.gov/todayinenergy/detail.php?id=61303>.

As a result, rolling outages in Texas utilities outside of the ERCOT grid were limited to five hours in the Southwest Power Pool and just two hours in the Midcontinent ISO; customers within ERCOT suffered rolling outages for nearly 100 hours.²⁰

Moreover, during the storm, the ERCOT generators that were not affiliated with monopoly utilities had lower outage rates than those that were owned by local monopolies, suggesting that generators are operated more efficiently and effectively under a competitive wholesale market. Similarly, during December 2022's Winter Storm Elliott, RTO-managed regions in the Eastern Interconnection saw lower generator outage rates than regions managed by monopoly utilities. During Elliott, no RTO resorted to rolling outages, but the Tennessee Valley Authority and a few regulated monopoly utilities in the Southeast had to cut service to some customers to protect system stability.²¹

The Merits of an RTO

The economic and reliability advantages of RTOs are well documented and explain why consumers with growing electricity needs, like manufacturers and data centers, are at the forefront of promoting RTO expansion.²² In addition, some stakeholders favor RTOs for their environmental benefits, including accelerating clean investment that both displaces legacy fossil resources and better integrates renewable energy resources into the grid.²³ While RTOs are a kind of real-time energy market integrated into electric transmission grid operations, their functions are broader. Indeed, RTOs have been described as an “air traffic control” system for the electric grid. RTOs do not own electric generators or transmission wires, nor do they buy or sell electricity. Instead, they oversee the flow of electricity over the transmission system, ensuring that the amount of electricity generated and consumed stays in balance and that no component of the grid gets overloaded. Thus, the core task performed by RTOs is coordinating electricity power flows from producers to consumers in ways that minimize costs and respect the limits of the grid, and in so doing, help avoid blackouts and other problems.

Today's RTOs are based on a system known as “security constrained, bid-based, economic dispatch.”²⁴ “Security constrained” refers to ensuring that power flows stay within safe operating levels. “Bid-based” indicates that the system primarily relies on generator owners' voluntary offers to increase or decrease output. “Economic dispatch” indicates that the RTO seeks to minimize the overall cost to consumers by prioritizing the use of the lowest-cost generation resources available.



RTOs oversee the flow of electricity over the transmission system, ensuring that the amount of electricity generated and consumed stays in balance and that no component of the grid gets overloaded.

20. “Final Report on February 2021 Freeze Underscores Winterization Recommendations,” Federal Energy Regulatory Commission, Nov. 16, 2021. <https://www.ferc.gov/news-events/news/final-report-february-2021-freeze-underscores-winterization-recommendations>.

21. “FERC, NERC Release Final Report on Lessons from Winter Storm Elliott,” Federal Energy Regulatory Commission, Nov. 7, 2023. <https://www.ferc.gov/news-events/news/ferc-nerc-release-final-report-lessons-winter-storm-elliott>.

22. “Powering AI: Examining America's Energy and Technology Future,” Written Testimony of Tom Hassenboehler, Electricity Customer Alliance, Before the House Committee on Energy and Commerce, Subcommittee on Energy, Climate, and Grid Security, Electricity Customer Alliance, June 4, 2024. https://d1dth6e84htgma.cloudfront.net/06_04_24_ENG_Testimony_Hassenboehler_bf7dca9497.pdf.

23. Giberson and Hartman, pp. 15-19. <https://www.rstreet.org/research/electric-paradigms-competitive-structures-benefit-consumers>.

24. William W. Hogan, “Electricity Market Design and Efficient Pricing: Applications for New England and Beyond,” *The Electricity Journal* 27:7 (August–September, 2014), pp. 23-49. <https://www.sciencedirect.com/science/article/abs/pii/S1040619014001705>; “Locational Marginal Pricing (LMP), Price Formation and Competitive Electricity Markets,” FTI Consulting, last accessed July 18, 2024. <https://lmpmarketdesign.com/lmp.php>.

Before RTOs, utilities had to solve the same problem—how to serve customers at the lowest cost with the available resources. To some extent, they relied on security constrained economic dispatch tools like those that RTOs use. However, because each utility managed only a small part of the grid, many external forces could affect parts of the grid outside of an individual utility's control. Utilities relied on three general tools to survive in that complicated environment: oversizing their transmission system to handle the outside effects; redispatching their own power plants to help protect their lines from being overloaded (in other words, cutting some low-cost generation and increasing higher-cost generation to avoid grid congestion); and requesting “transmission loading relief” (TLR)—emergency edicts directing other utilities to reduce power flows affecting a heavily loaded power line.²⁵

RTOs benefit from their much broader regional footprint, improving their ability to coordinate power production and consumption in advance of impending or unforeseen issues and keep the system working smoothly. The “bid-based economic dispatch” part of the RTO system design works to find the cheapest-available generators to manage grid congestion. Before the day begins, an RTO’s day-ahead market enables the scheduling of the lowest-cost resources available capable of meeting forecasted demand consistent with safe, reliable operation of the grid. In real time, the RTO will update its economic dispatch every 5-10 minutes based on changes in consumption and production on the system, issuing instructions to generators to increase or decrease their output in consideration of grid limits, making the adjustments in the lowest-cost way as determined by generator offers into the system. RTOs also use TLRs, but less frequently, as they are typically able to anticipate and avoid potential problems.²⁶

Current Developments

Current efforts to boost regional cooperation in the West center around five efforts: (1) CAISO’s WEIM and its expansion to day-ahead markets; (2) SPP’s efforts, which include adding a day-ahead market to WEIS and pursuing RTO West development; (3) the Western Resource Adequacy Plan (WRAP); (4) the Western Transmission Expansion Coalition (WestTEC); and (5) the West-Wide Governance Pathways Initiative (WWGPI). Only SPP’s RTO West effort and the WWGPI are explicitly aimed at developing RTOs to serve the West; the other efforts advance only certain RTO functions. Below, we provide a quick rundown on the status of these efforts as of Summer 2024.

CAISO’s WEIM and EDAM

As previously noted, the WEIM is a real-time energy market that balances supply and demand every five minutes across participating regions in the western United States. In the decade or so of its existence, WEIM has been credited with saving nearly \$5.5 billion, primarily by enabling market-based energy imbalance



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25. “Annual U.S. Transmission Data Review,” U.S. Department of Energy, October 2016, pp. 20-23. https://www.energy.gov/sites/prod/files/2017/04/f34/Annual%20US%20Transmission%20Data%20Review%202016_0.pdf.

26. Devin Hartman, “Wholesale Electricity Markets in the Technological Age,” *R Street Policy Study* No. 67, August 2016. <https://www.rstreet.org/wp-content/uploads/2018/04/67-1.pdf>.

solutions and lower-cost congestion management.²⁷ CAISO's extended day-ahead market (EDAM) will allow for more effective preparation for real-time operations, helping utilities reduce the use of higher-cost energy generation resources and become better prepared to respond to reliability threats. The EDAM initiative is expected to become operational in early 2026.

SPP WEIS, Markets+, and RTO West Plans

SPP's WEIS was launched in 2021, both to meet current utility needs for regional energy imbalance markets and as outreach to Western utilities as part of a plan to compete to provide an RTO in the Western Interconnection. The Markets+ proposal would add a day-ahead market and complementary services to the WEIS's real-time market. SPP filed its Markets+ tariff (the proposed market rules) with FERC in April 2024, and a decision by FERC is expected later in the year.²⁸ In June 2024, SPP proposed changes to its RTO tariff to enable full membership in the RTO for utilities in the Western Interconnection. Several small- and medium-sized utilities in the West have expressed interest in joining SPP as soon as early 2026.²⁹

Western Resource Adequacy Plan (WRAP)

WRAP is intended to ensure that utilities in the West have enough energy resources to meet peak demand throughout the year to ensure grid reliability.³⁰ The program helps utilities coordinate resource planning, optimize resource sharing, and adhere to a standardized framework for resource adequacy requirements while ensuring that no utility leans on the resources of others. WRAP participants will submit resource plans for evaluation to ensure they meet adequacy requirements, with mechanisms for tracking and verifying resource availability and performance. WRAP has begun a transition phase to full implementation but currently does not expect to be fully operational with binding obligations on participants until 2027.

Western Transmission Expansion Coalition (WestTEC)

WestTEC aims to improve interregional transmission expansion planning in the West by developing a detailed transmission study to be used by transmission owners, developers, and regulators.³¹ The study is intended to reflect credible and transparent methodologies, clearly identify project drivers, provide cost estimates and quantitative assessments of projected benefits, and identify preliminary routes for expansion along with a review of alternatives. While the process is primarily informational in its goals, the quality of the planned work



WRAP is intended to ensure that utilities in the West have enough energy resources to meet peak demand throughout the year to ensure grid reliability.

27. "Benefits," Western Energy Markets, last accessed April 30, 2024. <https://www.westerneim.com/Pages/About/QuarterlyBenefits.aspx>.

28. "Southwest Power Pool Completes and Files Markets+ Tariff with Collaboration and Support from Western Stakeholders," Southwest Power Pool, April 1, 2024. <https://www.spp.org/news-list/southwest-power-pool-completes-and-files-marketsplus-tariff-with-collaboration-and-support-from-western-stakeholders>.

29. "SPP files expanded regional transmission organization tariff to include western entities," Southwest Power Pool, June 5, 2024. <https://www.spp.org/news-list/spp-files-expanded-regional-transmission-organization-tariff-to-include-western-entities>.

30. "Western Resource Adequacy Program," Western Power Pool, last accessed Aug. 7, 2024. <https://www.westernpowerpool.org/about/programs/western-resource-adequacy-program>.

31. "Western Transmission Expansion Coalition," Western Power Pool, last accessed Aug. 7, 2024. <https://www.westernpowerpool.org/about/programs/western-transmission-expansion-coalition>.

is intended to facilitate subsequent efforts by transmission developers and help better adapt the Western grid to projected consumer demands.

West-Wide Governance Pathways Initiative (WWGPI)

The WWGPI began from an idea advanced in a letter by several utility regulators that then became a stakeholder-driven effort to develop a single RTO to serve the Western Interconnection.³² Many stakeholders in the West find the existing CAISO governance structure to be too tightly tied to California state politics, making CAISO unlikely to grow into a West-wide RTO by itself. The primary goal of the WWGPI is to reform CAISO governance by establishing an independent governing board—initially to oversee operation and development of the WEIM and EDAM markets, but ultimately to lead a single RTO to serve the West. WWGPI’s proposed independent governing board would explicitly be developed to be acceptable to a wide range of state policymakers, utilities, and other stakeholders in the West. Ultimately, the intention is to establish a new regional entity that would leverage the capabilities of the existing CAISO organization, but under the guidance of an independent board acceptable to regional stakeholders.

One RTO for the West, or Two, or Something Else

Industry officials and regulators in the western United States have pursued wholesale power market reorganization off and on for over 25 years.³³ Some efforts brought about small gains in utility cooperation, but little else of lasting value. To a great extent, each effort was stymied by a pair of difficult-to-reconcile forces: On the one hand, the greatest advance in economic efficiency will come from implementing a single West-wide market; on the other hand, political differences—primarily between California energy policies and those of many other Western states—have made it impossible so far to create a single organization to oversee a West-wide grid and energy market.

To put it bluntly, many Californians do not want to see their hard-fought environmental and energy policies diluted or diminished by switching from a California-based RTO to a unified West-wide operation. Similarly, Westerners outside of California often refuse to turn over control of their utilities, generators, and transmission grids to any organization dominated by Californian interests. This divide is illustrated by a lawsuit being pursued by the attorneys general of Idaho, Montana, Utah, and Wyoming, among others, against California and four other states asserting that those states’ energy policies are undermining industries essential to the country’s prosperity.³⁴ The WWGPI seeks to overcome this divide.



Political differences—primarily between California energy policies and those of many other Western states—have made it impossible so far to create a single organization to oversee a West-wide grid and energy market.

32. “West-Wide Governance Pathways Initiative,” Western Interstate Energy Board, last accessed July 19, 2024. <https://www.westernenergyboard.org/wwgpi>

33. “Organized Market Retrospective: A Review of Organized Market Efforts in the West,” Public Generating Pool, October 2021. <https://www.publicgeneratingpool.com/studies-reports-index/2021-organized-market-retrospective>.

34. Leo Wolfson, “Fed Up With Fallout From California Energy Policies, Wyoming Sues,” *Cowboy State Daily*, May 23, 2024. <https://cowboystatedaily.com/2024/05/23/fed-up-with-fallout-from-california-energy-policies-wyoming-sues>; Clark Mindock, “Republican-led states ask Supreme Court to quash Big Oil climate lawsuits,” *Reuters*, May 23, 2024. <https://www.reuters.com/legal/government/republican-led-states-ask-supreme-court-quash-big-oil-climate-lawsuits-2024-05-23>.

A two-market solution may seem like a viable solution to address these political differences, but numerous studies have detailed the economic advantages of a single market. The “State-Led Study,” run by the State Energy Offices of Utah, Idaho, Colorado, and Montana, with input from several other Western states, concluded that a single RTO would yield \$2 billion in savings annually by 2030.³⁵ In comparison, a two-RTO system separating California from the rest of the Western states offered an estimated \$1.43 billion in savings.³⁶ The \$570 million annual difference is big enough to keep interest in a single market high. Other studies have confirmed these findings, and also show large benefits from a single West-wide RTO.³⁷

Industry reorganization is stuck between the irresistible appeal of seeking the best possible economic savings and the immovable issue of political differences. Achieving a single, integrated market means working together despite political differences, which is fundamentally a governance issue; proceeding with two separate markets entails confronting economic barriers created by trading between the markets.

RTO Independence and Governance

When considering regulatory frameworks in general, a primary policy concern is who gets to decide what and for whom. As one economist explained, a debate over regulation is not “a dispute about whether planning is to be done or not. It is a dispute as to whether planning is to be done centrally, by one authority for the whole economic system, or is to be divided among many individuals.”³⁸ In the case of RTOs, it is a question of whether the decision-making responsibility is “done centrally” or “divided among many individuals.” It is also important to determine who will be held accountable when things go wrong.³⁹ As described in an earlier R Street report, RTOs are unusual organizations, as they are neither private businesses or government agencies, but, instead, are something in between: quasi-autonomous nongovernmental organizations (or QUANGOS).⁴⁰

Single-state RTOs have an advantage of simplicity. For example, the Public Utility Commission of Texas oversees the ERCOT grid, and its members are appointed by Texas political authorities. If a problem arises, public utility commissioners can be fired, as they were after February 2021, and as was ERCOT’s president and most members of the ERCOT board of directors. Similarly, in California, members of the board overseeing CAISO are appointed by the governor with the consent of the state senate.⁴¹



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VS



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\$1.43 billion in savings.

35. Herman K. Trabish, “Changing climate and electricity mix renew region-wide power market ambitions for the ‘Wild West,’” *Utility Dive*, Nov. 15, 2021. <https://www.utilitydive.com/news/changing-climate-and-electricity-mix-renew-region-wide-power-market-ambitions/608792>; “The State-Led Market Study: Technical Report,” *Energy Strategies*, July 30, 2021, pp. 48–49. <https://www.energystat.com/s/Final-Roadmap-Technical-Report-210730.pdf>.

36. *Ibid.* pp. 49–50. <https://www.energystat.com/s/Final-Roadmap-Technical-Report-210730.pdf>.

37. Kavya Balaraman, “Western RTO could add up to \$79.2 billion to regional economy, report finds,” *Utility Dive*, July 27, 2022. <https://www.utilitydive.com/news/western-rto-could-add-up-to-792-billion-to-regional-economy-report-finds/628172>.

38. Friedrich August von Hayek, “The Use of Knowledge in Society,” *American Economic Review* 35:4 (September 1945), pp. 519–530. <https://oll.libertyfund.org/titles/hayek-the-use-of-knowledge-in-society-1945>.

39. IITV, “PowerGub Ep. 5 WTF is an RTO?,” YouTube, April 2, 2024. https://youtu.be/FG0Ou76-tVY?si=1j3bF_AiVkkNdWVv.

40. Travis Kavulla, “Problems in Electricity Market Governance: An Assessment,” *R Street Policy Study* No. 180, August 2019. <https://www.rstreet.org/research/problems-in-electricity-market-governance-an-assessment>.

41. “Board Selection Policy, Version #5.1,” California ISO, Aug. 17, 2022. <https://www.caiso.com/documents/board-selection-policy.pdf>.

Multistate RTOs naturally have more complex governance structures. For example, the PJM Board of Managers is self-perpetuating in part, as a nominating committee composed of existing board members identifies and nominates candidates to fill vacancies. However, the PJM members committee—which is intended to represent all sectors of the industry—must approve new candidates at the next regularly scheduled members meeting. State regulators, through the Organization of PJM States, Inc., and other state political officials may have informal influence in the process, but they play no direct role in selecting the Board of Managers. These arrangements promote independence of the board from any one state or sector of the industry but also make the lines of political accountability for bad outcomes less clear. Board-selection processes differ across multistate RTOs, but the bottom line remains a tradeoff of more independence for less-transparent modes of political accountability.

In Order No. 2000, FERC’s original RTO regulations, the Commission did not require board members to be independent from stakeholders as long as a single sector did not have too much influence on board action.⁴² Nonetheless, all FERC-approved RTOs currently have independent boards.⁴³ Yet the commission also worried that an independent RTO board could become too isolated from stakeholder and public policy concerns. As such, the governing board of a new RTO in the West could experiment with a mix of stakeholder and independent directors in an effort to address this as long as the rules prevent any stakeholder sector from gaining too much influence.⁴⁴

Ensuring balanced treatment of stakeholder sectors is more difficult than it may seem. Many market participants are involved in multiple industry sectors, either directly or through corporate affiliates. Typically, such companies must choose to align with a single sector for voting or other official actions.⁴⁵ In such cases, a challenge arises in terms of balance because transmission- owner participation is voluntary under FERC policy.⁴⁶ Because transmission lines are an essential component to the success of an RTO, incumbent transmission owners are often “first among equals” in governance processes. Still, despite difficulties, the consensus among participants is that stakeholder processes generally work well.⁴⁷

State participation in RTOs does require a commitment of resources. Typically, a state commissioner from each state is assigned to serve on a market advisory



As such, the governing board of a new RTO in the West could experiment with a mix of stakeholder and independent directors in an effort to address this as long as the rules prevent any stakeholder sector from gaining too much influence.

42. Regional Transmission Organizations, Order No. 2000, 65 Fed. Reg. 809 (Jan. 6, 2000), pp. 842-849. <https://www.govinfo.gov/content/pkg/FR-2000-01-06/pdf/00-2.pdf>.

43. Stephanie Lenhart and Dalton Fox, “Participatory democracy in dynamic contexts: A review of regional transmission organization governance in the United States,” *Energy Research & Social Science* 83 (January 2022). <https://www.sciencedirect.com/science/article/pii/S2214629621004369>.

44. Kavulla. <https://www.rstreet.org/research/problems-in-electricity-market-governance-an-assessment>.

45. See, e.g., “Membership & Sector Selection,” PJM, last accessed July 9, 2024. <https://www.pjm.com/about-pjm/member-services/membership-and-sector-selection>; “Stakeholder Engagement,” MISO, last accessed July 9, 2024. <https://www.misoenergy.org/engage/Stakeholder-Engagement>; “Considerations for a Western Regional Organization Stakeholder Engagement Process,” Gridworks, July 2024. https://www.westernenergyboard.org/wp-content/uploads/Gridworks_Stakeholders-Engagement-Processes-Brief.pdf.

46. Iulia Gheorghiu, “Despite authority to require RTOs, Glick says FERC will encourage bottom-up approach to creating power markets,” *Utility Dive*, Dec. 3, 2021. <https://www.utilitydive.com/news/despite-authority-to-require-rtos-glick-says-ferc-will-encourage-bottom-up/610874>.

47. Mark James et al., “How the RTO stakeholder process affects market efficiency,” *R Street Policy Study* No. 112, October, 2017. <https://www.rstreet.org/research/how-the-rto-stakeholder-process-affects-market-efficiency>.

committee.⁴⁸ State participation also brings benefits. As a previous R Street publication explains:

Rather than having a loose collection of overbuilt systems, at higher costs to the utility customers, an RTO coordinates those planning efforts; if one state needs generation or capacity, or needs the ability to transmit power from one side of its territory to another, an RTO allows for a more cost-effective means of meeting that need.⁴⁹

Similarly, state reliability and environmental policies can be met at lower costs to consumers when participating in a well-designed RTO.⁵⁰

State Policy Autonomy

Several practical concerns emerge from the political differences across states in the West. Politically conservative states worry that joining an RTO with a more politically progressive state may result in conservative state consumers subsidizing progressive state policies, particularly those related to clean energy mandates and other environmental goals. Wyoming legislators recently considered several bills intended to prevent the state's energy consumers from higher costs driven by policies pursued by progressive states to address this exact concern.⁵¹ Utah recently enacted a law intended in part to help keep two coal plants in operation.⁵² Conversely, some in progressive states are concerned that their policy goals might be hindered if they participate in a regional market with more conservative states. For example, California stakeholders have been concerned that stronger integration with the relatively fossil-heavy intermountain West region would induce emissions leakage.⁵³ Both types of concerns amount to the desire that the state retain control over its own energy policy choices, especially their preferred generation mix.

Central to the debate are state policies concerning fossil fuels and renewable energy, both with regard to potential impacts on market efficiency and on the costs associated with transmission expansions. The West is not the only region with heterogeneous state policies. RTOs in the Eastern Interconnection span states with quite diverse energy policy goals. In ISO-New England, four of the states have 100 percent renewable or clean energy standards, but the other two have none.⁵⁴ Similarly in PJM, five states have adopted some variety of 100 percent clean or carbon-free electricity standards, but two states have none. In the Midcontinent



In ISO-New England, four of the states have 100 percent renewable or clean energy standards, but the other two have none.

48. See, e.g., Christopher A. Parent et al., "Governance Structure and Practices in the FERC-Jurisdictional ISOs/RTOs," Exeter Associates, Inc. for NESCOE, February 2021. https://nescoe.com/wp-content/uploads/2021/02/ISO-RTOGovernanceStructureandPractices_19Feb2021.pdf.

49. Chris Villarreal, "Red states missing out on better electricity market opportunities through RTOs," R Street Institute, Feb. 1, 2021. <https://www.rstreet.org/commentary/red-states-missing-out-on-better-electricity-market-opportunities-through-rtos>.

50. Devin Hartman, "Strengthening Electric Reliability Through Markets in the Midwest," R Street Institute, June 23, 2022. <https://www.rstreet.org/commentary/strengthening-electric-reliability-through-markets-in-the-midwest>.

51. Dustin Bleizeffer, "Measures to guard against rising electricity costs advance in committee," *The Kemmerer Gazette*, Feb. 21, 2024. <https://www.kemmerergazette.com/stories/measures-to-guard-against-rising-electricity-costs-advance-in-committee,23176>.

52. Charlie Schill, "Gov. Spencer Cox signs legislative measure aimed at strengthening Utah's energy independence," *Cache Valley Daily*, March 15, 2024. https://www.cachevalleydaily.com/news/gov-spencer-cox-signs-legislative-measure-aimed-at-strengthening-utah-s-energy-independence/article_803edcad-51f3-578f-b8a0-cd6e7490ea7c.html.

53. See, e.g., Meredith Fowlie and Danny Cullenward, "Report on Emissions Leakage and Resource Shuffling," Independent Emissions Market Advisory Committee, Sept. 10, 2018. https://calepa.ca.gov/wp-content/uploads/sites/6/2018/09/6e-IEMAC_Meeting_Materials_9-21-18_Fowlie_and_Cullenward_Report_on_Emissions_Leakage.pdf.

54. "Map and Timelines of 100% Clean Energy States," Clean Energy States Alliance, last accessed July 9, 2024. <https://www.cesa.org/projects/100-clean-energy-collaborative/guide/map-and-timelines-of-100-clean-energy-states>.

ISO and SPP, on the other hand, only a few states have explicit decarbonization goals for the electric industry; most of the states do not. The energy markets continue to work efficiently in regions in which states are pursuing diverse decarbonization strategies or no strategy at all.

Of note, progressive state policies may indirectly create opportunities for conservative states. Intermittent renewable energy sources such as wind and solar tend to require more active grid management to keep the system in balance. States with generating resources capable of responding to the variations in wind and solar output will be poised to provide that balancing service by selling exported power at a premium. On the flip side, when renewables output is flush, conservative states can import power at a steep discount. This results in an economic and reliability win-win for both progressive and conservative states. Of course, when the balancing energy comes from fossil-fueled plants, it creates an emissions leakage problem for progressive state climate policies, but it is one that the responsible state can address as it sees fit.

Transmission has been a thornier issue. Electricity transmission is typically broken into two key aspects: planning and cost allocation. Transmission cost allocation for multistate projects is inherently challenging—it can take 10 years or more from the time that a need for a new line is identified until it is put into service. An analysis of transmission benefits involves a great deal of uncertainty, and state regulators tend to seek the lowest possible cost allocation for consumers in their states to avoid the possibility of paying too much.⁵⁵ Adding political differences to the already-difficult cost allocation process only heightens the challenges of reaching an agreement. As this issue pertains to a Western RTO, many of the operating details will depend on how states in the West implement FERC’s recently issued Order No. 1920, which adds new requirements to existing transmission-planning processes.⁵⁶ The best approach may be for states within an RTO or regional planning group to agree on detailed principles for identifying transmission benefits and allocating costs before the development of specific transmission-expansion plans. Such principles should clearly address the difficulties of identifying costs and beneficiaries associated with “policy driven” projects, which are the key source of contention. One simple principle would assign excess costs to the state or states whose policies drive the need for a project that would otherwise fail a cost-benefit test.⁵⁷

Another potential conservative state opportunity comes from transmission development to link large renewable energy developments to progressive state markets, such as the TransWest Express linking Wyoming to California and the



The best approach may be for states within an RTO or regional planning group to agree on detailed principles for identifying transmission benefits and allocating costs before the development of specific transmission-expansion plans.

55. Michael Giberson, “Clarifying Electric Transmission Benefits,” R Street Institute, Dec. 8, 2023. <https://www.rstreet.org/commentary/clarifying-electric-transmission-benefits>.

56. Federal Energy Regulatory Commission, “Building for the Future Through Electric Regional Transmission Planning and Cost Allocation,” Federal Register 89:113 (June 11, 2024). <https://www.federalregister.gov/documents/2024/06/11/2024-10872/building-for-the-future-through-electric-regional-transmission-planning-and-cost-allocation>.

57. Devin Hartman, “FERC Hath Spoken Transmission,” R Street Institute, May 14, 2024. <https://www.rstreet.org/commentary/ferc-hath-spoken-transmission>.

SunZia line to better link New Mexico to Arizona and California.⁵⁸ Building out the transmission grid is costly, but it can notably reduce congestion costs, generator market power, and generally boosts market efficiency. Transmission lines do not discriminate between renewable or other sources of power; they simply follow system physics. Currently, the politics and economics of renewable energy lead the renewable energy industry, many environmentalists, and many progressive policy advocates to support transmission expansion. This coalition goes a long way to working through the inevitable permitting and other challenges any transmission project faces. However, these political winds may shift in the future in ways that divide the coalition in favor of transmission expansion. Thus, conservative states should see the current situation as an opportunity to get market-enhancing transmission lines into the pipeline that will benefit their state. Of course, it remains important to ensure that transmission-planning processes assess the benefits and costs of safeguarding against uneconomical projects.

A recent report on emerging Western electricity markets concludes that states have the tools necessary to protect state policy interests and authority as the West moves toward more integrated market structures.⁵⁹ The report highlights three key state regulatory authorities that give states the ability to protect their interests: (1) ratemaking, (2) a review of transfer of asset control, and (3) integrated resource planning (IRP).

All state regulators have ratemaking authority, and it is the ultimate tool by which state regulators can ensure that the rates of regulated monopolies remain just and reasonable. State utility commissions also typically have statutory authority to review when a utility seeks to merge, sell, or transfer control over its assets. Because participation in an RTO involves transferring some control over the planning and operation of the transmission and operation of generation assets, state regulator consent is likely needed and could be used to assert state policy interests. In addition, IRP processes typically require utilities to demonstrate generation and demand-side resource plans to meet expected customer needs in its service territories. Regulatory ability to approve or withhold approval of IRPs, as well as the individual resource certificate of need cases that IRP justifies, can be used to ensure that utilities within a state remain focused on effectively meeting consumer needs within the state. In fact, being in an RTO enhances the ability of state regulators to perform core cost-of-service regulatory oversight functions. Specifically, RTOs provide enhanced information on the economics of generation and demand-side resources that regulators can use to gauge the prudence of utility IRP and proposed resources.⁶⁰

The report highlights three key state regulatory authorities that give states the ability to protect their interests:



1. Ratemaking



2. A review of transfer of asset control



3. Integrated resource planning (IRP)

58. Pat Maio "Wyoming Likely To See Billions Of Dollars In Wind Projects Built In Next Few Years," *Cowboy State Daily*, Feb. 26, 2024. <https://cowboystatedaily.com/2024/02/26/wyoming-to-see-billions-of-dollars-in-wind-projects-built-in-next-few-years>; Susan Montoya Bryan, "Powered by wind, this \$10B transmission line will carry more energy than the Hoover Dam," AP News, Sept. 1, 2023. <https://apnews.com/article/renewable-energy-line-sunzia-arizona-california-a541af36657a299a1a0822e75f943b9f>.

59. Stephanie Lenhart and Lincoln Davies, "Western Electricity Emerging Markets: State-Level Regulatory Analysis," Nicholas Institute of Energy, Environment, and Sustainability at Duke University, March 27, 2023. <https://nicholasinstitute.duke.edu/publications/western-electricity-emerging-markets-state-level-regulatory-analysis>. See, e.g., "The State Led Study: Market and Regulatory Review Report," Energy Strategies, June 30, 2021. <https://www.energystrat.com/s/Final-Roadmap-Market-and-Regulatory-Review-Report-210730.pdf>.

60. Giberson and Hartman. <https://www.rstreet.org/research/electric-paradigms-competitive-structures-benefit-consumers>.

These regulatory tools enable state regulators to protect their consumers' interests while remaining engaged in shaping Western electricity markets.

Managing the Costs of Market Seams

Should the political difficulties of organizing a single RTO prove insurmountable, two RTOs would still promise significant benefits. The state-led study that estimated \$2 billion in annual savings in 2030 for a single West-wide RTO also found that a two-RTO arrangement could confer \$1.43 billion in annual savings in 2030.⁶¹ The operation of two RTOs simultaneously would necessitate navigating the seams between each market. Still, the degree of inefficiency imposed by two markets is not something fixed and unchangeable: It depends to a high degree on how each of the markets operate and on the rules that are established for trading from one market to the other. RTOs in the eastern United States devote significant resources to solving seams issues, and we have learned much from those efforts. Furthermore, technologies for market-to-market coordination can shrink the efficiency losses that would come with a two-market approach.

Speakers at the Spring 2024 joint meeting of the Committee for Regional Electric Power Conference (CREPC) and Western Interconnection Regional Advisory Body (WIRAB) covered the basics of a two-market approach well.⁶² Everyone acknowledges that seams introduce costs that translate to lower potential economic gains than what would be seen with an ideally functioning single market. Still, cutting the number of transmission tariffs and balancing areas in the West from the current number—above 30—to just two (via RTOs) for most trades would be a dramatic improvement over the status quo.

A transmission policy expert at the CREPC-WIRAB meeting summarized five key inefficiencies associated with power market seams:

1. Ineffective interregional transmission planning
2. Generator-interconnection delays due to information-sharing requirements
3. Reduced resource adequacy capabilities
4. Difficulty in managing unintended power flows
5. Inefficient trading across lines connecting two markets⁶³

The WestTEC transmission planning effort described above is currently underway and should be able to inform transmission expansion plans regardless of whether one RTO serves the entire West or two RTOs emerge. There is some danger with a two-RTO solution that stakeholders within each RTO will develop



Cutting the number of transmission tariffs and balancing areas in the West from the current number—above 30—to just two (via RTOs) for most trades would be a dramatic improvement over the status quo.

61. "State-Led Market Study," <https://www.energystat.com/s/Final-Roadmap-Market-and-Regulatory-Review-Report-210730.pdf>

62. Robert Mullin, "Western Officials Get Rundown on 'Irritating, Inefficient' Market Seams," RTO Insider, April 29, 2024. <https://www.rtoinsider.com/77399-western-officials-rundown-irritating-inefficient-market-seams>.

63. Ibid.

an “inward” focus that could interfere with West-wide planning efforts, as the transmission expert noted, and such tendencies should be resisted.⁶⁴

Difficulties in managing unintended power flows (also called “loop flows”) are a key concern. One of the accomplishments secured by RTOs operating security-constrained economic dispatch (SCED) systems is the coordination of energy production, energy consumption, and power flows among producers and consumers. The system tracks the physics of power flows to know when lines may be loaded to their limits. But on an interconnected grid, what happens elsewhere on the grid also affects power flows within the RTO. An important part of seams agreements between RTOs are tools to manage potential overloads caused by loop flows.

Inefficient trading across lines connecting two markets result from differences in trading deadlines and other rules that limit the RTOs’ ability to adjust schedules in response to last-minute changes. Coordinating trading deadlines across adjoining markets helps trading run more smoothly, but constant changes in system conditions make direct market-to-market coordination valuable. For example, the New York ISO employs a Coordinated Transaction Scheduling (CTS) process with neighboring RTOs in New England and Pennsylvania, enabling the organization to use real-time market information to adjust power flows with its neighbors.⁶⁵ However, even better market efficiency can be achieved by intertie optimization—a tool already in use by the WEIM and WEIS services.⁶⁶ Intertie optimization adjusts power transfers between two markets—that is, on lines connecting the two markets—in ways that maximize the use of the lowest-cost energy available in either market (and in ways that are always consistent with safe operating levels on the grid).

Thus, although a single market promises greater operational efficiencies, it would require a degree of agreement among electricity policymakers in the West that may prove impossible to achieve. A two-market approach raises concern over seams issues, but the careful development of market rules and application of best-available approaches for intertie optimization can radically reduce efficiency losses. If efforts to develop a single market governance structure stall, a two-market approach is worthy of careful consideration. Regardless, a one- or two-organized market approach is superior to the inefficient and highly fragmented status quo of seams across the western United States.



An important part of seams agreements between RTOs are tools to manage potential overloads caused by loop flows.

64. Ibid.

65. See, e.g., David B. Patton et al., “2023 State of The Market Report for the New York ISO Market,” Potomac Economics, May 2024. https://www.potomaceconomics.com/wp-content/uploads/2024/05/NYISO-2023-SOM-Full-Report__5-13-2024-Final.pdf.

66. Johannes Pfeifenberger et al., “Brattle Consultants Discuss the Need for Intertie Optimization in New Report,” Brattle, Oct. 2, 2023. <https://www.brattle.com/insights-events/publications/brattle-consultants-discuss-the-need-for-intertie-optimization-in-new-report>.

Conclusion: An RTO Can Boost Wholesale Electric Competition in the West

Markets are enhanced by competition; this is true for electric power and the consumers that utilities serve. Some may prefer to keep things as they are, but the reliability, economic, and environmental benefits of an RTO are clear. Most utilities and regulators in the West have been persuaded that energy imbalance markets have produced benefits for consumers, that day-ahead markets will increase those benefits, and that the additional grid coordination that comes with an RTO offers even more benefits than come from the limited real-time and day-ahead markets.

While the electric industry has been dominated by monopolies, most historical justifications for this trend no longer apply. Wholesale competition has been keeping the costs of wholesale power down in states with RTOs.⁶⁷ As several studies have shown, transitioning the West to an RTO promises to reduce the cost of reliably generating the power needed by consumers in that region. The same is true, to a slightly lesser extent, should two RTOs be established instead of one, so long as the two RTOs commit to high-quality seams management policies.

State regulators and other policymakers often express concern about losing authority if utilities in their states were to join RTOs. However, states would retain autonomy to pursue their primary policy objectives. Indeed, participating in an RTO could lower the cost of achieving reliability and environmental goals and make it easier for states to pursue such goals. States should prepare for an uptick in state resources required to interface with RTOs, but this does not alter the merits of the RTO value proposition, as these costs pale in comparison to the benefits of RTOs.

Establishing core RTO functions, namely those around organized markets and regional transmission planning and cost allocation, is a proven, equitable approach that has been shown to advance the core electricity objectives of both progressive and conservative states: lower costs, greater reliability, and environmental benefits. If the states in the West are able to embrace the idea of an RTO (or two) and work toward implementation, they will be on the most promising path for establishing a more comprehensive, efficient, and dynamic system of wholesale electric competition in the region.



Participating in an RTO could lower the cost of achieving reliability and environmental goals and make it easier for states to pursue such goals.

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67. Devin Hartman and Jennifer Chen, "Transmission Reform Strategy from a Customer Perspective: Optimizing Net Benefits and Procedural Vehicles," *R Street Policy Study* No. 257, May 2022. <https://www.rstreet.org/research/transmission-reform-strategy-from-a-customer-perspective-optimizing-net-benefits-and-procedural-vehicles>.